## Chief Information Officer (CIO)

### U.S. Army Materiel Command (AMC)

Information Technology (IT) and Information Technology Management (ITM)

## AMC INFORMATION TECHNOLOGY STRATEGIC PLAN

# FOREWORD

> *"There is nothing more difficult to take in hand, more perilous to conduct or more uncertain in its success than to take the lead in introducing a new order of things."*
>
> - **Niccolo Machiavelli**

The purpose of this Plan is to provide an overview of a deliberate structure for US Army Materiel Command (AMC) Information Management (IM) and Information Technology Management (ITM).  Every day, information technology (IT) reshapes and restructures our patterns of social interdependence and every aspect of our personal and business lives.  AMC will implement new laws and concepts that make significant changes in the management and acquisition of IT.

The AMC's ability to serve as the Army's readiness command relies heavily on information resources and technology.  The business world is migrating to the Chief Information Officer (CIO) concept and the government indicated its intent to follow the same course.  A CIO provides the leadership to develop tactics for orienting IT investments toward improving business operations.  As we approach the twenty-first century, we have a unique opportunity to develop and refine the principles, planning, considerations, and responsibilities for better information and technology support of AMC's varied missions.  The AMC CIO must leverage new opportunities that promote the most efficient, effective use of available IT assets.

In an environment where business transformation has become a way of life, the CIO will be a partner with every member of the Command to provide the IT plans, architectures, and infrastructure that allows users to best do what they want for themselves.  Policy to meet these challenges include: the use of sound business practices; establishment and enforcement of command-wide standards; employ metrics that measure performance; standardizing the IT technical (CIO) organization; adopting a standard technical architecture and operating environment; centrally managing all IT resources to increase horizontal integration and eliminate duplication of effort; and establishing configuration management for all IT to optimize synergy of effort.  Sound IM and ITM are increasingly key to enabling success in AMC's core competencies and support functions.  We must ensure that AMC IM and ITM are their most efficient and most effective so that our IT solutions remain force multipliers to best equip and sustain every soldier, in every unit, every day.

The benefits of effective IM and ITM allow AMC to:

- Do relevant things  --  Be in the right business,
- Establish better measures of performance and cost,
- Do things right,
- Know what is being done and by whom,
- Improve information systems, and Share common support technology.

The AMC IT Strategic Plan supports AMC being customer oriented, with the customer being the soldier.  The application of IT will be the key enabler in AMC being the Army's premier provider of MATERIEL READINESS . . . Technology, Acquisition, Materiel Development, Logistics Power Projection, and Sustainment . . . to the TOTAL FORCE across the spectrum of joint military operations.  AMC's four priorities are: PEOPLE, PEOPLE, PEOPLE, and PEOPLE. First, we will mentor each other to best accomplish AMC's awesome responsibilities to serve the soldier.  Second, AMC will be a values based organization fully espousing loyalty, integrity, and courage.  Third, we will seek balance between work and a personal life to ensure that when we work, we work and  beyond that  -- life matters.  Fourth, we will train, train, train and recognize, recognize, recognize.  We will invest in our people and IT will support the AMC's investment in people as well as AMC's role to be the readiness command for the Army.  The future of AMC remains tied to responsiveness to the soldier and to the national military strategy.  Future IT in AMC must support both ends of the spectrum – readiness and modernization – simultaneously - ensuring that AMC IT is efficient in peace and reliable in war is our goal.

Comments and questions regarding the AMC IT Strategic Plan should be directed to:

AMC Chief Information Officer
ATTN:  Resources and Plans Division
US Army Materiel Command
5001 Eisenhower Avenue
Alexandria, VA 22333-0001

Commercial (703) 617-9425       DSN 225-9425

James D. Buckner
Chief Information Officer

**A M C – Your *READINESS Command . . . Serving Soldiers PROUDLY !***

DEPARTMENT OF THE ARMY
HEADQUARTERS, UNITED STATES ARMY MATERIEL COMMAND
5001 EISENHOWER AVENUE, ALEXANDRIA, VA 22333-0001

September 1999

INFORMATION TECHNOLOGY (IT) STRATEGIC PLAN

AMC Information Management (IM) and IT Management (ITM)

# TABLE OF CONTENTS

**APPENDIX A      IT Business Process Management**

**APPENDIX B      Investment Factors**

**APPENDIX C      Steps to Develop and Use IT Performance Measures**

**APPENDIX D      Configuration Management (CM)**

**APPENDIX E      Application Blueprint**

**APPENDIX F      Technology Blueprint**

**APPENDIX G      Migration Plan**

**APPENDIX H      Information Assurance Strategic Plan**

# LIST OF EXHIBITS

**EXHIBIT**                                                                                           **Page**

# 1 INTRODUCTION

Advances in Information Technology (IT) have greatly improved the capability of the U.S. Army Materiel Command (AMC) to perform its mission in support of the national defense. Continuing progress in information management, executive decision systems, and the enabling technologies provide the AMC opportunities for even greater capabilities in the future. From routine internal administrative support and action staffing to external communications and coordination necessitated by rapid troop deployments to domestic or international crises, the decisionmaking leverage provided by improved information management and technology is becoming more critical for successful accomplishment of AMC missions.

Over the past 30 years, there have been many adjustments to the techniques applied to IM. The fundamental purpose never wavered: to help the Army work better at less cost. Decision-makers dealt with large, mainframe, centralized legacy systems to distributed, personal computer based individual systems to the explosion of the Internet now growing at a rate of 10,000 new websites per week. Technology gurus moved from merely automating work processes to business process reengineering, continuous process improvement, and measurable increases in productivity related to achievement of specific objectives. Responsibility for information mission areas moved from one staff agency to another in the 1980s as the Army established a variety of IM staff sections incorporating all IM disciplines. Now the emphasis is on Enterprise Management to achieve information dominance by linking military strategy and doctrine to the employment of information technology. The ideal long-term vision is that AMC will operate as a collaborative and cooperative single entity. Operating as a single virtual enterprise, with access for all, will allow AMC to deliver world class service at an efficient cost. AMC business processes and supporting IT will be integrated and managed enterprise wide. The use of structured models and standards will allow enterprise-wide IT solutions that work both horizontally and vertically throughout AMC. The target IT environment will be defined and there will be a defined migration path to that end state which is lean, flexible and totally supportive of the AMC business processes.

## 1.1 Purpose

This Plan establishes the direction and framework for AMC Information Management, including the management of information technology and resources. The Plan promulgates a concept of operation, processes and structures for IM & ITM that ensures integration, sharing, standardization, interfacing, interoperability, timeliness, and accuracy of information provided to AMC decision makers in peace, transition to and from conflict, conflict and operations other than war.

This Plan is pursuant to the policy outlined by Army Regulation 25-1, Army Information Management, along with the basic laws supporting its implementation - such as: the Government Performance and Results Act; the Paperwork Reduction Act, as amended (44 U.S.C. Chapter 35); the Privacy Act, as amended (5 U.S.C. 552a); the Freedom of Information Act (5 U.S.C. 552 et seq.); the Chief Financial Officers Act (31 U.S.C. 3512 et seq.); the Federal Property and Administrative Services Act, as amended (40 U.S.C. 759 and 487); the Computer Security Act (40 U.S.C. 759 note); the Budget and Accounting Act, as amended (31 U.S.C. Chapter 11); and the Clinger-Cohen Act (P.L. 104-106 formerly known as Division E, Information Technology Management Reform Act of the Defense Authorization Act of 1996); and the Telecommunications Act (47 U.S.C.).

## 1.2    Applicability

This Plan is applicable to all information management (IM) and Information Technology (IT) programs and initiatives conducted under the auspices of the U.S. Army Materiel Command or any of its subordinate Commands, Activities, Agencies, or installations.  All CIOs in AMC will have technical oversight authority for all IT resources including IT personnel.

## 1.3    Background

As the U.S. Army implements the goals of Joint Vision 2010, heavy forces must be more strategically deployable and more agile with a smaller logistical footprint, and light forces must be more lethal, survivable and tactically mobile.  To reach this new potential, The Army depends upon the U.S. Army Materiel Command (AMC) to equip and sustain the force.   AMC must accomplish future operations with highly capable, state of the art IT at affordable costs and with shorter acquisition schedules.  Appendix A outlines the AMC IT Business Process Management. It is essential that AMC have the most effective design and efficient operation for all information resources.

The benefits of a sound Information Management program:

- Harnesses the power of IT to achieve the commander's overall strategic intent;
- Improves the productivity, efficiency, and effectiveness of all AMC programs;
- Strengthens the IT management structure and reinforces IT guidelines;
- Provides horizontal IT integration across AMC programs and functional areas;
- Evaluates the IT business case from organic and contractor origin; and,
- Provides a process for the funding review of IT programs, workload and benefits.

This Plan establishes implementing procedures and assigns management responsibilities for implementation, execution, and oversight for AMC's IM Program.  This is not a supplement to any other regulation.  It is a compilation of  AMC IM policies, instructions, and procedures that will be used for conducting the day-to-day business of IM within AMC.

## 1.4    Responsibilities

### 1.4.1    AMC Chief Information Officer (CIO)

Serves as the Integrator in IT Business Process Management (Appendix A).  The Headquarters AMC Deputy Chief of Staff for Corporate Information (DCSCI) serves as the Chief Information Officer for AMC.  The responsibilities are:

a.  Serve as the principal advisor to the Commanding General and other AMC leadership on all information management, IT, and information systems.

b.  Serve as the principal focal point in AMC for information management matters with Congress, Office of the Secretary of the Army, Headquarters Department of the Army, Major Army Commands, other military departments, the Department of Defense including Defense Agencies, academia, and industry.

c.  Serve as AMC's central authority on Information Technology (IT) management, policy, planning, funding, guidance, and enforcement.  Serve as the senior authority for telecommunications programs.

d.  Provide long term direction and strategic planning for the management of information resources to include the Internet and website management.  Develop the IT Investment Strategy and Funding Plan.

e.  Develop policy for the acquisition, use, performance and monitoring of IT. Ensure the security requirements identified in AR 380-19 are integrated into all IT acquisitions.

f.  Link IT to AMC mission.

g.  Validate IT requirements, promoting effective and efficient designs and operations of all major information resources management processes.

h.  Create and oversee procedures to manage IT resources.  Provide input to the AMC Deputy Chief of Staff for Intelligence, as required, for the preparation of MS4X funding for ISS.

i.  Implement the Army Information Systems Security (ISS) Program within AMC and manage the AMC segment of the mandated information assurance programs.

j.  Develop, maintain, facilitate and implement a sound, integrated IT architecture and common operating environment.

k.  Assess the positions and personnel necessary to achieve the AMC requirements for information management.  Provide the senior technical oversight for all IT personnel.

l.  Serve as the technical coordinator for all subordinate CIOs (MSC/SRA).

l.  Provide oversight of AMC's collection of information, assembling of data, and control of paperwork to include policies for the programs of information dissemination; data management; records management; Visual Information; printing and publications; freedom of information; and privacy act.

m.  Serve as the functional proponent in AMC for the business process reengineering program with IT impact.

n.  Provide IM support and services for Headquarters, AMC.

o.  Serve as the senior policy official for the AMC electronic commerce program and associated electronic commerce activities, initiatives, and solutions.

## 1.4.2   Executive Agent(s) for Information Management

Serves as the Developer in IT Business Process Management (Appendix A).  The CIO may use executive agents for operational IM and IT functions as required.  Their responsibilities and duties, under the supervision of the AMC CIO, will be generally as follows:

a.  Perform analysis of AMC technical objectives to facilitate development of standards and standard systems within AMC.

b.  Evaluate new and emerging technologies, information management techniques, and application software.

c.  Assist in the development of AMC IT policies and directives.  Provide IT policy advice.

d.  Develop and maintain the AMC Information Systems Architecture (ISA) and Common Operating Environment (COE) that addresses business systems, IT infrastructure, and other IT areas.  Manage AMC ISA/COE configurations.  Modify the ISA/COE as required.

e. Ensure that systems designs are per AMC policies, guidance, and the AMC ISA/COE.

f. Develop AMC IT technical guidance.

g. Establish a synchronization process integration plan.

h. Translate functional requirements into ISA system technical requirements.

i. Develop and information utility that users worldwide can access to obtain needed information services.

j. Use and resource, as required, existing validation facilities to evaluate systems interoperability of new technologies.

k. Participate in the synchronization process at AMC elements. Make recommendations on the insertion of new technologies into the ISA.

l. Ensure an Integrated Data Environment (IDE) technical solution to meet functional requirements.

### 1.4.3   Principal AMC Officials

Serves as the Customer in IT Business Process Management (Appendix A). The AMC Deputy Chiefs of Staff, Major Subordinate Commanders (MSC), and Separate Reporting Activity (SRA) Directors/Commanders, within their respective areas of functional and business process proponencies, will:

a. Analyze their missions and revise their business and administrative processes, as appropriate, before requesting or making significant IT investments in support of those processes.

b. Participate in the processes outlined in the CIO IT Investment Strategy and Funding Plan.

c. Participate in the IT synchronization process and assist the AMC CIO in ensuring ISA/COE compliance..

d. Provide for budgeting and request funding for Engineering Change Proposals and new IT initiatives in their functional areas.

e. Establish a CIO at each AMC subordinate level down to and including large installations to serve senior IM official, who has the sole responsibility to implement IM and IT programs. These CIOs are responsible for the full scope of statutory, regulatory and management

processes delineated throughout this Plan and applicable regulations.  At all levels throughout AMC, local Directors of Information Management (DOIMs) will be under the direct command and control of the respective local CIO.

      f.  Identify functional requirements.

      g.  Manage Staff Agency/MSC/SRA information management activities and processes.

      h.  Ensure IM plans and programs meet Information assurance Plan requirements.

      i.  Ensure compliance with applicable software copyright laws and license agreements.

      j.  Ensure AMC ISA/COE compliance.

### 1.4.3.1   Functional Proponents

It is the responsibility of the functional proponent, acting as the customer to identify and validate the information requirements needed to accomplish the assigned mission.  Functional proponents may establish boards for the  AMC Business Systems Management process that achieve the required coordination between HQ AMC and the MSCs in prioritizing IT directions within a functional area or support area.  The customer (functional leadership) sets the business priorities within each functional area.  The AMC CIO acts as Integrator and technical expert in providing an integrated IT solution.  Functional proponents work jointly with the AMC CIO to achieve the AMC Strategic Intent while dealing with the realities of the current operational environment.  Information requirements will be met through the most cost-effective technical solution per the economic analysis and the considerations presented by the developer to fulfill the validated requirement.  Functional proponents will evaluate full justifications of the requirements. The AMC functional proponents are the ultimate decision makers on the business priorities within their given areas.  The AMC CIO will be held accountable for ensuring that IT investments make the right impact on AMC business operations.  The direction setting for AMC IT will be accomplished through the processes outlined in this Plan.

# 2 CHIEF INFORMATION OFFICER

This Plan provides guidance within AMC on the implementation of the Information Technology Management Reform Act of 1996 (ITMRA), Pub. L. 104-106, known as the Clinger-Cohen Act, which President Clinton signed into law on February 10, 1996.   The Clinger-Cohen Act repeals Section 111 of the Federal Property and Administrative Services Act of 1949 (popularly referred to as the "Brooks Act") and establishes a new statutory scheme for information technology (IT) management and acquisition within the Executive branch. The Act's provisions took effect on August 8, 1996, 180 days after enactment.

## 2.1   General

Section 5125(a) of the Clinger-Cohen Act amends Section 3506 of the Paperwork Reduction Act of 1996 (PRA), Pub. L. 104-13, 44 U.S.C. Chapter 35, by establishing the position of Chief Information Officer in place of the designated senior of official for information resources management previously established by the PRA. This provision is intended to establish clear accountability for agency information resources management activities, provide for greater coordination among the agency's information activities, and ensure greater visibility of such activities within each agency.  AMC will have a CIO at the Command level reporting directly to the Commanding General and Deputy Commanding General, and at the MSC/SRA level reporting directly to those respective Commanders/Directors.  Commanders of large installations will also establish CIOs.

One of the most important responsibilities of the CIO is to promote effective agency operations by implementing budget-linked capital planning for, and performance-based management of, information technology systems. Under the Clinger-Cohen Act, agencies are to determine, before making an investment in a new information system to support a particular function, whether the function should be performed or supported by the private sector or another agency. Agencies should also, where appropriate, reorganize and revise the way a function is performed to improve its effectiveness before making significant IT investments to support that work. To ensure that these strategic issues are addressed by the agency, the Clinger-Cohen Act makes the CIO explicitly responsible for promoting improvements in agency work processes.

The CIO is also charged with facilitating the development, implementation, and maintenance of a sound and integrated information technology architecture for the agency, and promoting the effective design and operation of all major information resources management processes. The duties of the CIO are set forth at section S 125(c) of the Clinger-Cohen Act.

### 2.1.1   Designation of the Chief information Officer

Statutory requirements for CIOs apply to the military departments and major government agencies (e.g. Agriculture, Interior, Justice, Treasury, etc.).  Army Regulation do require MACOM Commanders to establish a senior IM who has the sole responsibility to implement the command's IM/IT program.  The Clinger-Cohen Act expects agency heads to select and position a CIO to ensure the effective acquisition and use of IT and to carry out the agency's information resources management responsibilities. While the organizational placement of the CIO is to be determined by the agency head, the person selected should report to the agency head directly, and not through another official. The CIO must actively participate, with the agency head and other senior agency officials, in planning and budgeting deliberations, support of work process redesign in areas being considered for IT investment, and the development of information technology program performance measures. Consistent with the Clinger-Cohen Act, information resources management shall be the primary duty of the CIO.

The agency head may designate as the CIO any individual who has the professional qualifications and experience required for the duties of the position. The position may be filled by recruiting and appointing someone from outside the agency, by the current senior information resources management official, or by someone holding another position in the agency.

The Commanding General, U.S. Army Materiel Command designated the Deputy Chief of Staff for Corporate Information (DCSCI) as the AMC Chief Information Officer.  The AMC CIO shall carry out the responsibilities and duties described in the Clinger-Cohen Act for agency CIOs.

### 2.1.2   MSC/SRA CIO Designation

Each AMC Major Subordinate Command (MSC) Commander and Separate Reporting Activity (SRA) Chief shall appoint a senior official to serve as the Chief Information Officer (CIO) of their respective organization.  AMC fully supports the goal of a single official whose primary duties involve orienting information technology (IT) investments toward our strategic business and mission operations. Creating a CIO in subordinate organizations provides the leadership a means to develop plans and establish procedures for the improved design, use, sharing, performance, evaluation, and modernization of information resources.  All CIOs have a technical relationship with AMC CIO concerning current and desired relationships among business operations and IT.

MSCs and SRAs may also appoint deputy CIOs that have additional experience in work process redesign, design and management of information technology architectures, and data and telecommunications management.

Beyond the letter of the law, let us embrace the spirit of a strong commitment to better manage the use of information, information systems, and information technology.  As we approach the 21$^{st}$ century, the establishment of CIOs throughout AMC gives us a unique opportunity to refine the

principles, planning, considerations, and responsibilities for better information and technology support of AMC's varied missions.

### 2.1.3    Relation to Chief Financial Officer (CFO)

The head of the agency is responsible for defining the operating relationship between the CIO and CFO functions and ensuring coordination in the implementation of the ITMRA, the PRA, the Chief Financial Officers Act, and the Government Performance and Results Act. The CFO continues to be responsible for developing, implementing, and maintaining the financial management systems as provided for in the CFO Act.  The CIO and CFO will work together under the direction of the AMC Command Group to ensure that the agency's information systems provide reliable, consistent, and timely program performance information.

### 2.2    Mission

AMC's successful pursuit of its complex logistics business depends heavily on the use of information resources. Clearly, the vital role of AMC in supporting the Army requires the most effective support of an array of information resources and the most efficient management of information. The AMC focal point for the integration of information resources is the Chief Information Officer (CIO). A systematic approach to the leveraging of systems architectures will allow maximum use of technology in support of the AMC strategic vision and goals. The AMC CIO provides the IT strategic plans and corporate direction for all elements of AMC to better use information resources in support of enterprise operations. In providing executive oversight and technical expertise the AMC CIO positions <u>all</u> AMC assets to provide maximum support to the Army and every soldier.

In consultation with the AMC MSC Commanders, AMC SRA Directors and the AMC Deputy Chiefs of Staff, the CIO evaluates critical deficiencies and strengths in Army-wide logistics support capabilities, and, assesses the effect of such deficiencies and strengths on the Army's ability to meet national security objectives.  The CIO has a significant impact on all Army operations due to the number of Army-wide IT program managers in AMC which support the Army's Sustaining Base Information Systems. The CIO encompasses the information resources and activities that have responsibility to raise, organize, train, equip, and eventually deploy and sustain Army and other assigned forces in the accomplishment of their missions in operational theaters.

The CIO mission within AMC is to provide the most effective information resources and optimal information technology (IT) support for AMC's global responsibility to equip and sustain the U.S. Army Total Force.

## 2.3   Responsibilities

♦ Year 2000 Project (Y2K)
♦ Information Assurance
♦ Continuity of Operations (COOP)
♦ Force Protection
♦ AMC IT Policies and Procedures
♦ IT Strategic Plan / Corporate Strategic Technology Direction (CSTD)
♦ IT Acquisition Management / Excess Equipment
♦ IT Resource PM : All IM Funding
♦ All IT Aspects of Military Construction – Army (MCA)
♦ Defense Megacenters (DMC), Telecommunications, Defense Message System (DMS)
♦ Army Enterprise Strategy
♦ IT Performance Measures / Metrics
♦ Develop, Set, Enforce IT Standards
♦ Validate IT Requirements
♦ Develop & Defend IM PPBES
♦ IT Support to HQ AMC
♦ AMC Publications & Printing Program
♦ AMC Visual Information Program
♦ Records & Files Management
♦ Freedom of Information Act (FOIA) & Privacy Act
♦ Materiel Weakness
♦ IT Configuration Management
♦ High Perform Computers (HPC)
♦ Career PM for IM
♦ Web Enabled Applications
♦ Focal Point for ALL CIOs / DOIMS
♦ POC for External IT Matters

## 2.4   Goals

The CIO goals within AMC (for the AMC CIO and all subordinate CIOs) are to:

♦ Provide the leadership necessary to address the impact of worldwide IT changes on AMC's business processes, operations, strategy, and policy.

♦ Ensure that Information Technology Management, as implemented in AMC, directly supports the Command's Mission and Core Competencies.

♦ Improve the productivity of AMC Programs through the use of Information Technology and the establishment of mission-based IT performance measures. Enhance interoperability, minimize unnecessary duplication of effort, and capitalize on AMC successes.

♦ Take advantage of advanced business practices, commercial economies, and global networks to promote a coordinated, interoperable, secure and shared Command wide, and Headquarters specific, infrastructure supported by a diversity of Private Sector Suppliers and a well-trained corps of Information Technology Professionals.

♦ Coordinate and conduct an Investment Review Process that drives Budget formulation and execution for Command Information Systems.

♦ Ensure the implementation of Technology Management Processes that align Information Technology Investments with the AMC Strategic Intent.

♦ Through partnership with industry, generate and obtain Innovative Information Technologies that can be rapidly applied toward the replacement, modernization, or termination of current information systems.

♦ Take advantage of fast changing industry IT capabilities.

♦ Provide a consistent, interactive information base that supports senior leaders with meaningful IT decision systems.

♦ Facilitate the fusion of multi-disciplinary functions to achieve virtual systems that support Vision 2010 and Army, 2010 and beyond.

## 2.5   Information Management Environment

The CIO will nurture within AMC an Information Management environment that:

a.  Fosters the establishment of an accurate and effective information base responsive to the user's requirements.

b.  Employs business reengineering practices to the development or refinement of processes before system automation is undertaken.

c.  Establishes a secure open-system approach to the acquisition and deployment of information technology.

d.  Establishes data-standardization procedures addressing clear data ownership responsibility, easy information sharing, and common user-interfaces.

e.  Fosters user involvement to ensure limited resources are effectively used to address prioritized mission-essential requirements.


## 2.6    Models and Simulations

Tomorrow's action officers and senior leadership will rely on improved models and simulation to support and process assessments of military force generation; command, control, communications, computers, and intelligence; ballistic missile defense; nonlethal combat; low intensity conflict; and special operations.  Enhanced models and simulations are also needed to evaluate the political, economic, ethnic, and religious effects on international security and their impact on military actions.  Modern network activities such as the Defense Simulation Internet, in concert with initiatives relating to open architecture, application portability and connectivity, and protocol standards, will enable the entire joint community to interact and responsively address the changing international environment.  Core competencies in various subject areas will be readily accessible to form collaborative and more informed responses to senior leadership issues.   Advanced simulations, for example, will include applications of virtual reality, synthetic environments, and integrated, multilevel simulations.  AMC action officers and their counterparts in the Army & MACOM Staffs, other Services, and Defense agencies, will have more powerful information technology tools to use to investigate, analyze, and assess national security options and alternatives.   These new, more powerful information technology tools include simultaneous, multisite, distributed wargaming via remote log on, shared workstation conferencing, rapid information interchange, multiparty video conferencing, and host-to-host connectivity.   This interaction will provide the AMC Staff leadership with informed, broad-based Military Net Assessments, National Military Strategy Documents, and Program Objective Memorandum evaluations.


## 2.7    IT Business Process Management

The chart at Appendix A depicts IT Business Process Management.


## 2.7.1   The Third Industrial Revolution

American enterprise is caught up in a massive restructuring not seen in this country since the second industrial revolution, which introduced the factory system and dramatically changed all aspects of American life. This sea change is being described as a paradigm shift that requires a new context for leadership and management practice in all sectors of our economy.  Government in general, and the Department of Defense in particular are caught up in this phenomenon, which some authorities call the third industrial revolution and others call the information age. We cannot stop it. We cannot avoid it. We can, however, tap into the power generated by the change forces

at work here and use it to transform AMC in ways that will take full advantage of the capabilities inherent in an information age economy.

The term information age is no more restricted to computers and data than the term industrial age is limited to machines and materials. The information age concept is all-encompassing and affects all facets of our culture, society, and economy. Therefore, all elements that make up the Department - our mission, vision, culture, leadership, management, human resources, products and services, processes, and systems - must be examined as we endeavor to help guide AMC into this new age. Experience has shown that there is great resistance to change within organizations when they are faced with massive dislocations brought on by the forces of change. History also tells us that usually and eventually the forces of change prevail over those who resist

### 2.7.2 Global Economy

Competition is no longer constrained by national boundaries. Every decision made by large enterprises, including governments, has profound impacts all over the world. Products, services, and ideas flow freely across national borders. Free enterprise and the discipline of markets has and is prevailing over planned economies and allocation of goods and services. The competition for skilled labor and professional skills pits non-profit and governmental organizations against for-profit and private sector concerns. Privatization and out-sourcing are increasing as the competition for talent triumphs over organizational stagnation and employee loyalty.

### 2.7.3 The Information Highway

Information is the new capital of the information age. Those enterprises that best learn to share information, rather than control it, will succeed. The availability of information and the means to both transform it and transmit it determines how efficiently and effectively an organization can re-order its business processes to respond to changing demands for products and services in an unforgiving global marketplace.

### 2.7.4 Employee Empowerment

The factory model for organizing and managing employees is a second industrial revolution paradigm that still prevails in most modern enterprises. This model was developed in an age when education was at a premium and the supply of unskilled or semi-skilled workers was endless. Hierarchies of management did the thinking and planning while armies of workers followed the rule book and did what they were told. In the information age, educated and skilled workers organized into teams need only information and the authority to act for the enterprise to be successful. The role of the manager is shifting from giving direction and rating performance to individual coaching and team facilitation.

### 2.7.5 Virtual Corporation

As the walls between nations become porous, so too are the fences that separate enterprises coming down. The enterprise will no longer be a physical entity organized around structure, but an ephemeral, intangible entity loosely associated in alliances to serve customer needs. The military establishment is no stranger to this concept as armies have always been formed out of divisions and specialized battalions for a specific purpose, and then reformed as events warrant.

### 2.7.6 Demand for Quality and Service

The new consumer is an educated, discriminating buyer of goods and services and demands value in the form of high-quality, low-cost, and rapid service. Products and services must meet, if not exceed, the expectations of sophisticated customers. This rule applies also to business buyers as well as consumers of government services. The concept of a captive customer is bound by the old paradigm even with respect to consumers of government services.

### 2.7.7 Transforming AMC

All of the attributes of the information age have impact on the ability of AMC to carry out its mission. While AMC direct competitor in the usual meaning of the term, it does compete in the marketplace for products, services, ideas, employees, funding, and support from the citizenry and their political leaders. AMC cannot isolate itself from the transforming influences inherent in the new paradigm. Desert Storm effectively demonstrated the capabilities of our high-technology weapons systems and proved the efficacy of Joint Operations resulting from the 1986 Goldwater-Nichols Act. But it also revealed a pressing need to reexamine the "tooth-to-tail" relationship between combat and support systems. The now exists a comprehensive methodology for performing process improvement projects that is applicable in all functional areas in the DOD. It supports three levels of improvement efforts that we include under the definition of functional process improvement (FPI).

AMC will improve its visibility of supplier's inventory stock levels by integrating as possible and applicable AMC systems with supplier systems. This integration should support reengineered business processes for inventory management and enable AMC to reduce inventories and move towards improves mission accomplishment. AMC will develop strategies to integrate applicable business functions/operations with commercial partners and prepare for the integration of wholesale and retail operations. The strategies will focus on the business operations that need to be tightly integrated with industry partners. The strategies should also include plans for preparing for the integration of wholesale and retail operations. AMC should identify the business operations in the wholesale environment that need to be closely integrated with the associated

retail operation. Similar to integration with industry, system candidates would include applications that require real time information processing between wholesale and retail operations. AMC should determine if the existing communications infrastructure can be modified to meet the integration requirements or provide guidance on implementing additional required technologies.

AMC should develop, or adopt industry, standards for the system integration and evaluate which network technologies would best optimize the integration. AMC should explore the option of configuring existing network technologies, but look to commercial solutions if that is not feasible. Possible solutions AMC should consider are: dedicated circuits installed, operated and maintained by a service provider, or dial-up network connections that provide access to supplier or retail systems. The chosen solution should support industry standard customer-supplier communication capabilities such as EDI, Electronic Commerce and DVD, Direct Vendor Delivery.

A set of common guidelines for external communications should be distributed within AMC and with industry partners (e.g., manufacturers of tank systems). AMC should require industry partners to adopt the chosen AMC standards as opposed to AMC reconfiguring its environment for each partner.

### 2.7.8   Continuous Process Improvement (CPI)

CPI reduces variation in the quality of output products and services and incrementally improves the flow of work within a functional activity.

### 2.7.9   Business Process Redesign (Redesign)

BP Redesign removes non-value added activities from processes, improves our cycle-time response capability, and lowers process costs.

### 2.7.10  Business Process Reengineering (BPR)

BPR radically transforms processes through the application of enabling technology to gain dramatic improvements in process efficiency, effectiveness, productivity, and quality.

Where the performance gaps are large, reengineering is the proper approach. Where they are small, incremental improvement provides the required results.  Incremental improvement is an extension of past performance without the driving force of a leader. Reengineering is driven by the pull of the future, the vision of the leader, or the target to which the company is aiming. Clearly both process improvement and process reengineering concepts are being incorporated into quality management principles and practices. Any methodology developed to guide improvement efforts must be comprehensive, and must be based on best practices wherever they are found.

### 2.7.11  BPR in AMC

New public laws, Defense initiatives, and US Army policies dictate that AMC transform itself from existing operations (business as usual) to a fundamental rethinking of business processes (routinely improving performance).  The AMC policy for Business Process Reengineering (BPR) for mission-related and administrative work processes is that the AMC Chief Information Officer (CIO) has the final approval authority and technical review approval authority for any BPR with a Command, Control, Communications, Computers, and Intelligence (C4I) / Information Technology (IT) (including National Security Systems) impact. Those organizations that wish to succeed in the future must observe the impacts of external environment changes relative to their own missions, tools, products, services, and approaches. The objective is to maximize performance and achieve improvements and cost reductions, e.g., improved customer satisfaction, reduced processing time, elimination of non-value added activities, streamlined high cost activities, increased product quality, and lower costs. Process, not IT, should drive reengineering. However, understanding the full range of possible reengineering scenarios requires detailed

knowledge of the latest available IT resources and the increasingly online, interactive, internet-enabled world that permeates today's work environment.  Thus, IT does play a key role in enabling BPR.

### 2.7.12  The Challenges Of BPR

As AMC transforms itself from existing to new processes, we must observe the changing environment of missions, tools, products, services, and approaches. Success in the future requires AMC to develop new capabilities.

FROM:

Paper-driven TO ELECTRONIC-BASED
Hierarchical TO NETWORKED
Power by hoarding information TO POWER BY SHARING INFORMATION
Appropriations funding TO LEVERAGED-COST FUNDING
Stand Alone TO VIRTUAL AND DIGITAL
Compliance-oriented TO PERFORMANCE-ORIENTED
Control-oriented TO BENCHMARK-ORIENTED
Solo resident experts TO TEAMS BY TALENT
Stovepipe organizations TO HONEYCOMBED ORGANIZATIONS
Oversight agencies TO COACHING AGENCIES
Single agency projects TO COOPERATIVE PROJECTS
Information-limited environment TO INFORMATION-UNLIMITED ENVIRONMENT
Delayed access TO INSTANT ACCESS
Slow response TO PROMPT RESPONSE
Data entered more than once TO DATA ENTERED ONCE
Decisions pushed to top of the agency
TO DECISIONS PUSHED TO THE CUSTOMER TRANSACTION
People do processing; limited time for critical thinking
TO PEOPLE DO CRITICAL THINKING; SMART TECHNOLOGY DOES PROCESSING
Technology-fearful TO TECHNOLOGY-SAVVY
Business as usual TO ROUTINELY IMPROVING

# 3   IT STRATEGIC PLANNING

## 3.1   General Planning Direction

The AMC CIO will establish and maintain strategic information resources management planning processes which include an IT Strategic Plan.  The overall AMC Strategic Plan defines the vision, mission, goals, objectives, and strategies of AMC.  The AMC IT Strategic Plan addresses how the management of IT becomes a key enabler in the fulfillment of AMC's strategic intent.  Effective IT planning promotes the efficient use of information throughout its life cycle.  The IT Strategic Plan maximizes the usefulness of information, minimizes the burden on AMC stakeholders, and preserves the appropriate integrity, availability, and confidentiality of information.  The IT investment and funding structure will link IT to anticipated program and mission needs, provide for reflection of budget constraints, and form the basis for budget formulation.  The work includes: (1) a listing of existing and planned major information systems; (2) a definition of the transition from the existing environment to the target environment including a listing of planned IT acquisitions;  (3) an explanation of how the listed major information systems and planned IT acquisitions relate to each other and support the achievement of the AMC mission; and (4) a summary of information security planning.   All AMC major subordinate commands and separate reporting activities shall prepare IT Plans of their own to provide an integrated concept for managing IT in their respective areas.  The IT Investment and Funding process requires all AMC elements to: Determine the baseline of existing functions, processes and information systems; Determine if functions should be performed by AMC, another agency, or by the private sector; Preclude obsolete or inefficient processes from being automated; and, Identify IT strategies and alternative solutions to support AMC goals and facilitate the reengineering process.

## 3.2   Major Planning Considerations.

- Align proposed IT investments with strategic goals.
- Achieve AMC mission and business objectives.
- Balance potential benefits against costs and risks.
- Provide continuous feedback to help make IT investment decisions.
- Ensure that AMC funds are spent effectively.

## 3.3    Technical Direction

The CIO approves the technical framework for using information resources that document linkages between mission needs, information content, and information technology capabilities. These frameworks include the implementation of the Joint Technical Architecture – Army (JTA-A) and development of the AMC Information Systems Architecture (ISA).

- Develop information systems in a manner that facilitates interoperability, application portability, and scalability of IT applications across networks of heterogeneous hardware, software, and communications platforms;
- Ensure improvements to existing information systems and the development of planned information systems do not unnecessarily duplicate information systems available within the AMC, Army, other Services, Defense Agencies, or from the private sector;
- Share available information systems with other agencies;
- Meet IT requirements through inter-agency sharing, when it is cost effective, before acquiring new IT resources;
- Acquire IT as much as possible from existing standard contract vehicles;
- Establish a level of security for all information systems that is commensurate with the risk and magnitude of the harm resulting from the loss, misuse, or unauthorized access to or modification of the information contained in these information systems.

## 3.4    Information Management Planning

All AMC Staff elements, functional proponents, command, and agencies shall plan in an integrated manner for managing information and Information technology throughout its life cycle and shall:

(a) Consider, at each stage of the information life cycle, the effects of decisions and actions on other stages of the life cycle, particularly those concerning information use and dissemination;

(b) Consider the effects of their actions on customers-stakeholders and ensure consultation as appropriate;

(c) Consider the effects of their actions on other Army elements, the soldiers, and other Defense agencies and ensure consultation as appropriate;

(d) Seek to satisfy new information needs through interagency or intergovernmental sharing of information, or through commercial sources, where appropriate, before creating or collecting new information;

(e) Coordinate planning for information systems with the AMC Chief Information Officer for inclusion in plans for resource allocation and use, including budgeting, acquisition, and use of information technology;

(f) Ensure training of all  personnel in skills appropriate to the effective management of information;

(g) Protect government information commensurate with the risk and magnitude of harm that could result from the loss, misuse, or unauthorized access to or modification of such information;

(h) Use voluntary standards and those set by AMC CIO policy or Federal Information Processing Standards where appropriate or required;

(i) Consider the effects of their actions on the privacy rights of individuals, and ensure that appropriate legal and technical safeguards are implemented;

(j) Record, preserve, and make accessible sufficient information to ensure the management and accountability of AMC programs, and to protect the legal and financial rights of AMC;

(k) Incorporate records management and archival functions into the design, development, and implementation of information systems;


### 3.4.1   Information Technology (IT) Strategic Planning

AMC subordinate elements shall establish and maintain IT Strategic Plans and management planning processes which include the following components:

(a) Strategic IRM planning that addresses how the management of information resources promotes the fulfillment of an agency's mission. This planning process should support the development and maintenance of a strategic IRM plan that reflects and anticipates changes in the agency's mission, policy direction, technological capabilities, or resource levels;

(b) Information planning that promotes the use of information throughout its life cycle to maximize the usefulness of information, minimize the burden on the public, and preserve the appropriate integrity, availability, and confidentiality of information. It shall specifically address the planning and budgeting for the information collection burden imposed on the public as defined by 5 C.F.R. 1320;

(c) Operational information technology planning that links information technology to anticipated program and mission needs, reflects budget constraints, and forms the basis for budget requests.,

(d) Coordination with other agency planning processes including strategic, human resources, and financial resources.

### 3.4.2   Summary of Computer Security Plans

The AMC Staff is in full compliance with Public Law 100-235, "The Computer Security Act of 1987."  All AMC computer systems processing sensitive information have a  computer security plan that meets the requirements of OMB Bulletin 90-08, "Guidance for Preparation of Security Plans for Federal Computer Systems that Contain Sensitive Information."  Guidance for preparation of security plans is in accordance with local instruction.  A computer security plan is developed during concept development and maintained throughout the system's life cycle.  Each plan identifies the protective measures implemented to ensure adequate security and privacy of the computer system.  Security Plans are reviewed and updated on an annual basis.

### 3.5   Planning Process

a.  The requirements identification is one of the most complex and important steps in the planning process and in the development of effective information system to meet those requirements.

b.  The information requirement defines the need for data or information to carry out tasks, activities, functions, or management processes.

c.  Requirements are categorized as new starts, deficiencies in current capabilities, and opportunities for technology infusion.

(1)  New starts.  New starts are requirements that are identified as voids (currently not being satisfied) or requirements that are currently being satisfied without the use of information technology.

(2)  Deficiencies in current capabilities.  The effectiveness of current capabilities is analyzed to identify deficiencies.  As part of life-cycle management during the operations phase of the information system, operations are periodically reviewed.  Current capabilities must be accurately assessed so that deficiencies are identified.  This assessment may reveal deficiencies in mission performance, such as inappropriate or inefficient business processes, lack of interoperability, resource sharing, accuracy, and timeliness of information.

(3)  Opportunities for technology infusion.  During systems operation, objectives or conditions may change as a result of feedback generated by life-cycle management activities.  In addition, a particular system or technology may need to be replaced because it is no longer

economically justified.  Also, a critical mission change could identify systems that are no longer fiscally or operationally effective.

d.  The process begins with the users request for IMA services.  The users request is submitted to the DOIM.  If the DOIM can satisfy the request using existing information resources this is the end of the process.  If the request cannot be satisfied within the command's authority a requirement statement is prepared.

e.  The requirement statement phase is the first of two major phases in the IMA planning process.  The requirement statement process includes the identification, documentation, and validation of requirements.

f.  Requirement statements are validated at each organizational level to ensure that the requirements support identified information needs, interoperability, and integration with existing and planned systems, when appropriate, and that they eliminate duplication.

g.  After validation, the requirements become a part of the Requirement Statement Status Report.  The status report documents the disposition of requirements submitted for HQDA validation and provides visibility for all new approved requirements.

h.  The IMA Modernization Plan is the second phase in the planning process.

i.  The IMA Modernization Plan is used to develop the POM, consistent with the Program Budget Guidance (PBG).

j.  The third and final step is when the functional proponent develops a modernization plan based on the approved requirement statement status report and per AR 11-32 programs resources as Management Decision Packages (MDEP).  MDEPs are the link between the programming phase and the goals and objectives in the planning phase.

## 3.6    Corporate Strategic Technology Direction (CSTD)

As part of the AMC IT Strategic Plan the AMC CIO developed the AMC Corporate Strategic Technology Direction (CSTD).  The CSTD is a business-driven approach to planning for, controlling, and investing in information technology resources.  The underlying theme behind the CSTD is to align the AMC Vision and Strategic Intent with operational decisions throughout AMC.  The CSTD includes nine parts.  Each part is aligned with a specific task and builds on the information from part deliverables as illustrated in Figure 3-1.
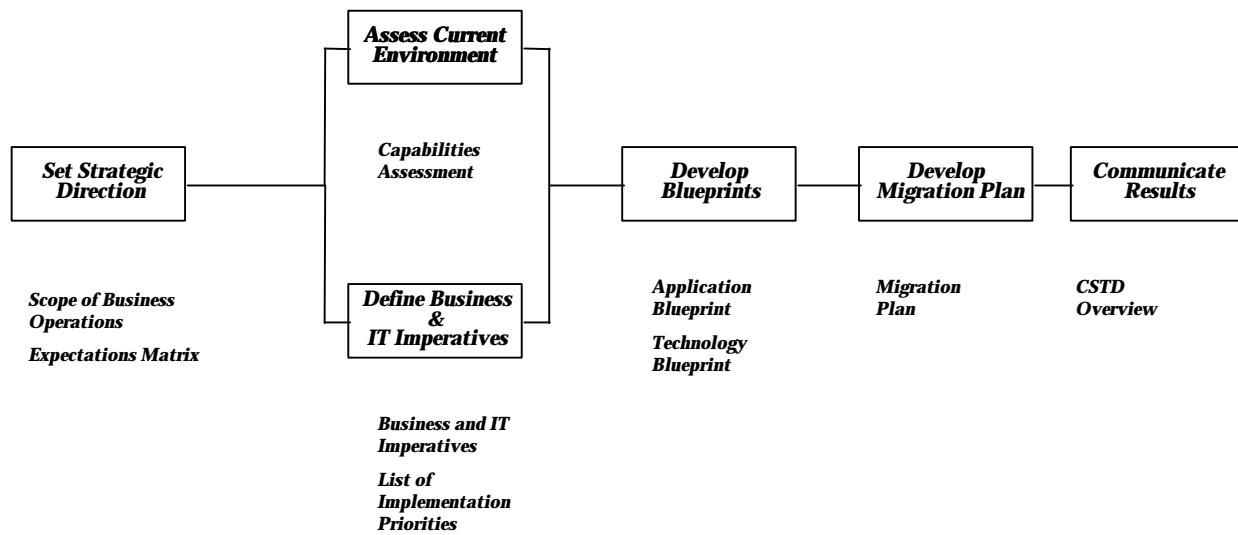
Figure 3-1

A brief description of each part of the CSTD is as follows:

### 3.6.1   Scope of Business Operations

Scopes the major AMC activities to be addressed by the CSTD. The Scope of Business Operations documents AMC's business operations, processes and types of business systems for each functional area.

### 3.6.2   Expectations Matrix

Documents key AMC stakeholders desires.

### 3.6.3   Capabilities Assessment

Documents how well the current AMC business systems support AMC in meeting the mission. The Capabilities Assessment documents how well the current AMC business systems and technology infrastructure support the AMC organization in achieving its Vision and Strategic Intent.  Major business systems from each core competency are  evaluated from a business and technical perspective. The business evaluation is based a system's support of AMC's Strategic

Intent.  The technology assessment is based on the technical health of the business system related to industry best practices and current technologies.

### 3.6.4   Business and IT Imperatives

Describes the major AMC activities required to achieve the Strategic Intent. The task focuses on identifying, consolidating and prioritizing the business and technology issues into a set of high level requirements.  These requirements must be met to enable AMC to achieve its Vision and Strategic Intent.

### 3.6.5   Implementation Priorities

Prioritizes the major AMC activities (Business and IT Imperatives) in order of business impact to achieving the Strategic Intent.  The Implementation Priorities organizes the Business and IT Imperatives in order of business impact to achieving AMC's Vision and Strategic Intent.  The priorities are organized around two main themes:
- Define the AMC Target Environment
- Migration to the AMC Target Environment.

The Implementation Priorities provide a framework for sequencing activities within the Migration Plan, as well as coordinating other system initiatives within AMC.  While this document identifies relative priorities, specific timeframes are not included but are described in the Migration Plan.

### 3.6.6   Application Blueprint (Appendix E)

Identifies major business functions to be performed and the IT applications necessary to support these business processes. The Application Blueprint defines the target business processes and applications required to support AMC's operational targets and Strategic Intent. The Application Blueprint determines the AMC operational targets for each core competency and provides a detailed explanation of the business system requirements needed to achieve those operational targets.

### 3.6.7   Technology Blueprint (Appendix F)

Makes recommendations regarding the technologies required to support the recommendations of the Application Blueprint.  The Information Technology Blueprint provides technology direction to support the technical requirements of the target applications defined in the Application Blueprint.  The focus of the document is the technology recommendations that will enable the target applications and help AMC achieve their Strategic Intent and operational targets.  The IT direction defined in the Technology Blueprint was developed through an iterative analysis of the

application capabilities defined by the Application Blueprint and the IT Imperatives. The operational requirements of the target applications were translated into technology requirements. From the technology requirements, specific technology strategies and recommendations were developed to support the technical requirements of the target applications and help AMC achieve its Strategic Intent and operational targets.

### 3.6.8   Migration Plan (Appendix G)

Documents the plan to migrate AMC to its desired future state. The Migration Plan focuses on organizing the target applications (Application Blueprint) and associated technology requirements (Information Technology Blueprint) into a plan that provides estimated costs and schedule to implement the CSTD recommendations.  The following are part of the Migration Plan:

Define AMC CSTD Projects:  The target applications and technology requirements are organized into projects according to business and technology similarities and dependencies.

Estimate Cost/Schedule of Projects:  Estimates for the time and cost of the projects are developed using an estimating model.  This model uses several estimating factors that provide a comprehensive analysis of factors that impact the time required to complete a project.

The Migration Plan provides AMC a detailed approach to implement the CSTD business and technology recommendations and achieve its operational targets and Strategic Intent.  The plan includes the business and technology requirements that must be in place and describes the cost and time to implement the plan.

### 3.6.9   CSTD Overview

The CSTD Overview summarizes tasks accomplished during each phase of the AMC CSTD project.  The document highlights the approach used to develop a structured, implementable corporate strategic direction that will enable AMC to achieve its Vision and Strategic Intent.

### 3.7   C4ISR Architecture Framework

The C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance) Architecture Framework, Version 1.0 , prepared by the C4I Integration Support Activity (CISA), serves as guidance to develop architectural descriptions for DOD internal use.  The objective of the Framework Version 1.0 is to provide guidelines for developing architecture descriptions that are internally consistent within themselves, of practical use to decision makers at all appropriate levels, and will integrate with other architecture descriptions across DOD.  The C4ISR Architecture Framework is organized by the three architecture

"views":  Operational, Systems and Technical.  The framework details products that may be needed in the course of describing an architecture view and also indicates the kinds of information to be captured in each product.  While the Operational, Systems, and Technical Architectures frequently are discussed as if they were separate architectures, they are best considered as different views of an architecture -- each focusing on particular aspects.

### 3.7.1   Operational Architecture

Operational Architectures contain "descriptions of the tasks, operational elements, and information flows required  to accomplish or support a warfighting function." i.e., the pertinent activities, operational elements, and associated information flows.

### 3.7.2   Systems Architecture

Systems Architectures describe "systems and interconnections which support the warfighting functions," that is, systems (including Automated Information Systems, communications, and weapon platforms) used to satisfy operational needs and the corresponding interconnections.

### 3.7.3   Technical Architecture

Technical Architectures are "a minimal set of rules governing the arrangement, interaction, and interdependence of the parts or elements whose purpose is to ensure that a conformant system satisfies a specified set of requirements," such as,  technical standards, criteria, and reference models that govern the implementation of systems to satisfy the operational needs.

### 3.8   Information Systems Architecture/Common Operating Environment (ISA/COE)

The Information Systems Architecture (ISA) describes the relationships among the work AMC does, the information AMC uses, and the information technology that AMC needs. It includes standards that guide the design of new systems.  An ISA makes it easier to share information internally and to reduce the number of information systems that perform similar functions. The ISA supports the AMC CSTD Technology Blueprint in providing the technology vision to guide resource decisions that reduce costs and improve mission performance.

The ISA provides the explicit description of the current and desired relationships among business and management process and information technology.  It describes the "target" situation which AMC wishes to create and maintain by managing its IT portfolio.  The documentation of the ISA will include a discussion of principles and goals.  For example, AMC's overall management environment, including the balance between centralization and decentralization and the pace of

change within AMC, should be clearly understood when developing the ISA. Within that environment, principles and goals set direction on such issues as the promotion of interoperability, open systems, customer access, end-user satisfaction, and security. This guidance may refer to a five component model used in the National Institute of Standards and Technology (NIST) Special Publication 500-167, "Information Management Directions: The Integration Challenge." AMC identified different IT "components" as appropriate in the CSTD and specified the functional proponent responsibilities at which specific aspects of the components will be implemented.

AMC will address steps necessary to create an open systems Common Operating Environment COE) and shall implement the following principles:

(a) Develop information systems in a manner that facilitates necessary interoperability, application portability, and scalability of computerized applications across networks of heterogeneous hardware, software, and communications platforms;

(b) Ensure that improvements to existing information systems and the development of planned information systems do not unnecessarily duplicate information systems available within AMC, from other Army or Defense agencies, or from the private sector;

(c) Share available information systems among MSCs/SRAs and with other agencies to the extent practicable and legally permissible;

(d) Meet information technology needs through intra-AMC and inter-agency (external to AMC) sharing, when it is cost effective, before acquiring new information technology resources;

(e) Establish a level of security for all information systems that is commensurate with the risk and magnitude of the harm resulting from the loss, misuse, or unauthorized access to or modification of the information contained in these information systems.

## 3.9    Transition to more Electronic Service

In order to ensure a smooth and cost-effective transition to a more electronic government providing improved service to the public, AMC shall include in its strategic IT plans:

a.  supporting program responsibilities (required under OMB Circular A-11) a summary of the AMC schedule to implement optional electronic maintenance, submission, or disclosure of information when practicable as a substitute for paper**,** including through the use of electronic signatures when practicable, by the end of Fiscal Year 2003 (note: agencies need not revise their reports on Federal purchasing and payment already required by OMB M-99-02, but should include the automation of purchasing and payment functions in their schedule);

b.  considerations of  whether an appropriate combination of information security practices, authentication technologies and management controls for electronic services applications will be practicable, and if so, which combination will minimize risk and maximize benefits in a cost effective manner;

c.  policies as necessary and appropriate to: (1) implement optional electronic submission, maintenance, or disclosure of information, and the use of any necessary electronic signature alternatives; and (2) permit private employers who have record keeping responsibilities imposed by the Federal government to electronically store and file information pertaining to their employees electronically;

d.  maintain appropriate information system confidentiality and security in accordance with the guidance contained OMB Circular A-130, Appendices I and III, and use, to the maximum extent practicable, technologies either prescribed in Federal Information Processing Standards promulgated by the Secretary of Commerce or supported by voluntary consensus standards as defined in OMB Circular A-119;

# 4    Information Management

The IM Program establishes a concept of operation, processes and structures for the management of information, information technology, information systems and information resources.  A central component of the concept is the integration, sharing, standardization, interfacing, interoperability, timeliness, and accuracy of information provided to decision makers in peace, transition to and from conflict, and conflict.  The use of structured models and standards will identify, define, and organize IM both horizontally throughout AMC and vertically in cooperation with external agencies.  An enterprise-wide  approach assures an appropriate structure to coordinate common business and technology areas as well as accessibility to information.  The IM Program supports all functional processes and is based on sound business principles supported by DOD-Army IM methods.  Maximizing the benefits of IT ensures that appropriate, timely, and accurate information is identified and made available for satisfying user requirements in the execution of mission responsibilities.

## 4.1    Vision

♦  Empower AMC to use information technology (IT) to improve mission performance.

♦  Transform AMC's IT culture to best support AMC's core competencies.

♦  Make IT a key enabler that supports the AMC strategic intent for a smaller logistics footprint, a highly leveraged partnership with industry, state of the art automation, technology enhancement, and virtual logistics for a capabilities based Army.

Technology is altering and dominating human behavior.  IT must be a key enabler to modernize AMC systems and harness the power of technology for the most efficient and effective ways to support the operational concepts developed for land combat in the 21$^{st}$ Century.  For the United States Army, the decade of the 90's was one of change that will continue into the next millennium.  The Army will execute future operations through the following six deliberate patterns:  Project the Force, Protect the Force; Gain Information Dominance; Shape the Battlespace; Decisive Operations; and Sustain the Force.

New Information Technology and new management concepts must facilitate the integration of materiel capabilities with Army operational patterns and organizational innovations. The sweep of digital technologies and the transformation to a knowledge-based economy creates a robust demand for new ways to manage and acquire information technology. Information Technology is the enabler for AMC to be the leader in equipping and sustaining America's Army into the new millennium, assuring responsive support, power projection and decisive victory.

The IM vision is further amplified by the critical demand for providing fused information to military tactical decisionmakers. The development of an interoperable and responsive information infrastructure is essential for effective joint military operations. The nature of modern warfare demands that we fight as a team to apply overwhelming force from different dimensions and directions to shock, disrupt, and defeat the enemy. Joint military operations involving land, sea, air, space, and special operations forces in flexible joint force structures require joint networks and systems that are fully interoperable across the air, sea, space, and ground environments. Towards this end, a new way of doing business is evolving which must accompany the advances being made in information decision systems and information technology.

The Information Management Vision will lead the way for AMC to be a meaningful part of the Revolution in Military Affairs.

## 4.2   Goals

Proper information management will ensure that existing information resources are identified, that information requirements are validated, and that AMC has a systematic approach for satisfying its IT requirements. Each AMC business process must be simplified through eliminating or reengineering processes before the application of IT to the function. This requirement applies to both new and existing information technology, systems, and services. The identification and validation of process improvements will be based on approved DOD and Army activity models documenting functional processes and associated data models  Proposed and existing business methods must be subject routinely to cost benefit (economic) analyses. For existing business methods, cost benefit analyses will be conducted as needed. For proposed business methods, cost benefit analyses will be conducted which validate and prove the proposed business method(s) prior to full implementation. Cost benefit analyses will include benchmarking against the best public and private sector business methods.

### 4.2.1 Improve Information Quality

**Improve the quality of information, information technology, information systems and information services available to the AMC Staff.**

Objective A.  Implement quality management techniques within the IM & ITM programs.

Objective B.  Employ business reengineering practices in the design and development of IT systems.

Program Initiatives:

1.  Execute a Total Quality Management (TQM) program to provide a basic level of understanding of TQM principles within the IM community.

2.  Identify user needs for new or improved IM & ITM procedures.

3.  Evaluate procedures and processes from  business process reengineering (BPR) or TQM approach prior to investing in IT for automating them.

Performance Measures:

1.  Common basis of understanding of TQM principles will facilitate BPR efforts through increased attendance of AMC  personnel at TQM training.

2.  Implement business process reengineering practices prior to automation of AMC Staff procedures.

3.  Implementation of automated procedures and electronic processing to shorten the time required to research, staff, analyze, and prepare coordinated AMC Staff actions.

### 4.2.2 Promote Effective Use

**Promote the effective use of information resources in the accomplishment of mission requirements.**

Objective A.  Provide the AMC user community with the appropriate information technology tools necessary to satisfy information and decision support requirements.

Objective B.  Continually review existing information system capabilities for technology infusion where appropriate.

Program Initiatives:

1.  Maintain contracts to allow the AMC to obtain required IT equipment, software, maintenance, and support quickly and cost effectively.

2.  Program for incremental IT advances in hardware and software.

3.  Provide IT training to AMC personnel tailored to their level of expertise--basic, intermediate, and advanced.

Performance Measures:

1.  More efficient AMC Staff action processing and information sharing through interoperability, standardization, and configuration management reviews.

2.  Improved efficiency through periodic hardware and software upgrades to capitalize on technology improvements.

### 4.2.3   Promote User Accessibility

**Promote efficient user accessibility to information and decision support IT services, tools and media.**

Objective A.    Establish a "user friendly" IRM environment in accessing and utilizing automation data bases and technology.

Objective B.    Improve the automation information system training program.

Program Initiatives:

1.  Provide templates and electronic forms on the IT network.

2.  Provide improved means of user support to troubleshoot, repair, and assist.

3.  Provide IT training to AMC Staff personnel tailored to their level of expertise--basic, intermediate, and advanced.

Performance Measures:

1.  Replacement of paper-constrained systems with higher quality electronic action processing through common software and shared data.

2.  Increased use of integrated software suites that facilitate user training and accessibility.

### 4.2.4   Improve the IM Process

**Improve the quality of the AMC Information Management process.**

Objective A.     Review the existing process and incorporate improvement measures where appropriate.

Objective B.     Foster functional user involvement in the prioritization of limited resources in addressing the acquisition and the employment of information technology.

Program Initiatives:

1.  Use the MSC/SRA CIOs as a corporate body to review and coordinate IM & ITM policies.

2.  Manage IT resources with configuration management board to ensure user needs are satisfied.

Performance Measures:

1.  Periodic review of Information Management instructions, policies and procedures to facilitate timely updates.

2.  Implement greater corporate involvement and consideration of user concerns (functional requirements) in IM & ITM decisions.

### 4.2.5   Improve the IT Environment

**Improve the information system and the information technology environment in AMC.**

Objective A.     Build information and decision support systems based on data standardization guidance.

Objective B.     Acquire network and data processing equipment in accordance with open-system and interoperability standards; invest in open-systems architecture.

Program Initiatives:

1.  Review existing data policy and processes to ensure that functional user information requirements conform to existing data standards of integrity, quality, and security.

2.  Use existing DOD data definition standards in data base and application software development.

3.  Coordinate and assist ongoing industry, Federal, and DOD data standardization initiatives.

4. Apply appropriate Federal policy and guidance regarding open-system architecture to the development and modernization of the AMC infrastructure.

Performance Measures:

1. Improved AMC operations resulting from accurate, reliable, available, and secure information.

2. Improved internal and external interoperability across the AMC, Army and the DOD enterprises.

3. Greater hardware, network, and data interoperability.


## 4.2.6 **Reduce Costs**

**Reduce costs associated with information system development and maintenance.**

Objective A.    Use structured software techniques and tools in application software development.

Objective B.    Where practicable, use commercial-off-the-shelf (COTS) software.

Objective C.    Foster competition in acquisition and monitor in-place contracts for efficiency and effectiveness of products and services provided.

Objective D.    Employ life-cycle management practices in the management of all automated information system programs.

Program Initiatives:

1. Maintain proactive training programs, such as GSA's Trail Boss, for personnel responsible for program management and life-cycle management of automated information systems (AISs).

2. Develop or modify software only if COTS does not meet the users' requirements.

3. Use standard operating systems and graphical user interfaces for all OA systems.

4. Use proactive program management and contract administration to economically obtain required OA hardware, software, maintenance, support, and training.

Performance Measures:

1. Action officer effectiveness and capabilities improvement through transfer of skills in one application to other applications in the standard AMC administrative IT suite (e.g., word processing and graphics).

2. Disciplined life-cycle management will enable orderly development and modification of AISs.

3.  Well-trained program managers and contracting officer representatives will maximize the return on AIS investments.

4.  Increased use of COTS software.

### 4.2.7   Improve Security

**Improve the security of IT and associated information systems.**

Objective A.     Improve the AMC security awareness program.

Objective B.     Employ appropriate security measures to prevent unauthorized access to and contamination of AMC information.

Objective C.     Conduct periodic internal reviews of AMC IRM policies, processes, and programs.

Program Initiatives:

1.  Comply with all DOD & DA AIS security requirements.

2.  Conduct periodic security awareness training for AMC personnel.

3.  Actively use directorate security managers to improve compliance with security measures.

Performance Measures:

1.  Improved security awareness through effective working level relationships with AMC Security and the directorates.

2.      Increased security awareness training and education to reduce the risk of security violations and improve the protection of classified information.

### 4.3   Enterprise Management

An organization's information requirements must relate to and support the Army Enterprise Strategy which is the single, unified vision for the Army C4I community.  Integrating both current Army doctrine and modernization plans for the evolution of information systems, the Enterprise Strategy is what the Army must do to "Win the Battlefield Information War" which is one of the objectives of the Army Modernization Plan.  The Enterprise Strategy must be incorporated into the planning for each information system.  The extent to which an existing information system receives resourcing support, and the extent to which a proposed information system gains resourcing support, will be determined in large measure by the degree to which the information

system conforms to the Enterprise Strategy. The management functions of formulating, planning, supervising, and resourcing the program, identifying and validating requirements, setting priorities, and overseeing program execution will not be contracted out to commercial sources. Operating information service and support elements such as telecommunications centers, data/information processing facilities, visual information support centers, records holding areas, field printing plants, and other similar type activities are subject to the Commercial Activities Program.

## 4.4    Headquarters AMC Information Technology Management

CIO Directorate of Information Management (DOIM)

### 4.4.1    DOIM Mission Statement

The CIO DOIM will modernize, enhance, and replace existing HQS AMC Staff IT and information systems that support general purpose sustaining base automation and related requirements, and provide communications interfaces to outside organizations. The purpose of the DOIM Program is to increase mission effectiveness of the AMC Staff through a user-friendly, integrated suite of hardware and software.

### 4.4.2    DOIM Responsibilities

The DOIM will satisfy mandatory non command and control, headquarters OA performance requirements such as word processing, local area networking, electronic mail, data base applications, graphics and image processing, spreadsheet capabilities, automated message handling, and action tracking on commercially available hardware and software platforms. The DOIM will meet future requirements through planned improvement projects in a modular fashion as those requirements are identified. The DOIM will maintain currency with technological advancements through an annual technology refreshment program. The CIO vision includes eventual connectivity with the Global Combat Support System – Army, the Defense Messaging System (DMS), and an operational multilevel secure processing environment.

## 4.5    Installation Directors of Information Management (DOIM)

The DOIM will provide IM & ITM services support to Army activities located in their designated geographical area in line with the mission and responsibilities outlines in paragraph 3.4 above. The support provided includes mobilization planning assistance for information services to designated State Operated Mobilization Stations. Upon mobilization, the DOIM provides information services support to Federalized State Area Commands (STARCS) located with their geographical area of responsibility.

## 4.6    Applications Software Maintenance

Provides support for the maintenance of unique AMC corporate and MSC/SRA applications soft-
ware.  The AMC unique applications software or management information systems fall within the
purview of CIO oversight and support various operational requirements within the AMC.  These
systems and their associated data bases are described in further detail in the various AMC IT
Strategic Planning Documents described in Section 4.  Each system or data base description has
as AMC functional proponent or business system functional board for the system who act as the
customer in providing requirements, functional descriptions, and narrative budget justification.

AMC will include the upgrade of obsolete data storage systems software as part of the migration
to the AMC target data architecture. Even if the appropriate form for storing a given part of
operational data is a flat file, this should be implemented using an industry-standard relational
database, in order to take advantage of its tool suite and the  standardized access methods it
provides.

## 4.7    Applications Development

Provides support for the conversion of existing corporate and MSC/SRA information system and data base
applications to the AMC ISA/COE as well as the development of new information system and data base
applications as the AMC business processes are refined and as new requirements emerge. Provides support
for AMC functional applications.  Also provides for efforts to test and refine unstructured and perhaps ill-
defined future concepts and requirements.  Allows the means to finish structuring future requirements and
for integrating the proposed technical solution(s) into the AMC ISA/COE.

The current suite of system software products supporting standard systems is largely obsolete,
proprietary, and incapable of providing the levels of service that will be required to support
AMC's Strategic Intent.  Data access to several standard systems occur through Data
Management Routines (DMRs) which makes any non-standard data access a manual effort, and
flat-file data storage complicates data retrieval in a largely SQL-based environment.

## 4.8    Corporate Office Automation (OA)

Provides for procurement of corporate OA IT as determined by the AMC CIO in conjunction with the
business priorities of the various AMC staff leaders and functional requirements boards.  Funds are
primarily used for corporate OA infrastructure.  Examples include AMC corporate OA software, required
hubs, servers, cabling, conduit, operating systems and peripherals, and printer interfaces.

AMC will provide guidance for OA purchase decisions. Corporate standards for OA hardware
and software will reduce purchase and support costs, and will enhance interoperability.

AMC should make purchases of OA hardware and software, and negotiation of site licenses, in bulk from a central organization. This will reduce costs significantly. This issue is covered in more detail in Section 7,  IT Acquisition.

### 4.9    MSC/SRA/HQS Office Automation (OA)

Provides for procurement of MSC/SRA/HQS AMC OA IT as deemed necessary by their CIOs.  IT purchased must be for MSC/SRA/HQS AMC OA hardware and software.  MSCs/SRAs/HQS AMC are encouraged to use standard IT contracts for these purchases available at the USA Communications Electronics Command (CECOM).  MSCs/SRAs/HQS AMC CIOs Should provide for the replacement of one-third of the MSC/SRAHQS AMC users' OA computers and IT infrastructure each year.  This will ensure a more consistent strategy in IT for the OA portion of the AMC IT Infrastructure, rather than waiting until an entire set of IT becomes obsolete.

AMC's current approach for purchasing desktop platforms, at the MSC level, is for each location to decide which desktop(s) will be installed.  At several commands, there are different desktop platforms within the location.  This has resulted in each MSC having a unique mix of desktop platforms, which raises the cost and the amount of manpower required to provide technical support.  Also, the approach for upgrading desktops has been left up to each command (even if the existing desktop platform is technically adequate).

### 4.10  Hardware Maintenance

Provides hardware maintenance (corporate, MSC & SRA) for AMC IT.  Maintenance costs include monthly core maintenance charges and time and material costs.  Maintenance is performed by government personnel and contractors, and supports the entire range of IT that AMC uses. Cabling requirements are also supported.   Provides for hard-ware maintenance for all IT supporting the AMC IT  requirements.

### 4.11  Training

Provides for commercially available off-the-shelf software training for AMC personnel.   A constant training of a portion of AMC personnel each year to maintain IT proficiency in AMC information resources.

### 4.12  Common Software Maintenance

Provides for annual upgrades and maintenance releases for AMC-wide common-user software and corporate IT software for the AMC Infrastructure.  This also provides for annual operating systems upgrades at Defense Megacenters as well as for monthly software fees for various legacy corporate computers and systems.  Providing for recurring and planned software upgrades for both user applications and the operating systems will allow the AMC to maintain currency with enhancements in functionality and features offered as a result of commercial efforts.

### 4.13  Help Desks / User Support Teams

Provides for government and contractor personnel to support various AMC IT program requirements, including the CIO and DOIM support offices, network and systems administration, informal user training requirements, and network engineering requirements.  This also provides for the management of miscellaneous categories such as IT security tasks, management of the IT inventory, and inventory/supplies receipt and handling.  Includes On-site, one-on-one user support is provided through contracted and government support personnel. These teams provide assistance on an 8 hour per day basis (expandable to a 24-hour per day basis) and are capable of supporting national emergencies and crises.

### 4.14  Electronic Information Collection.

AMC elements shall use electronic collection techniques where such techniques reduce burden on the user-customer, increase efficiency of AMC business programs, reduce costs to AMC or the Army, or provide better service to the customer-Army.

Conditions favorable to electronic collection include:

(a) The information collection seeks a large volume of data and/or reaches a large proportion of the public;

(b) The information collection recurs frequently;

(c) The structure, format, and/or definition of the information sought by the information collection does not change significantly over several years;

(d) The agency routinely converts the information collected to electronic format;

(e) A substantial number of the affected public are known to have ready access to the necessary information technology and to maintain the information in electronic form;

(f) Conversion to electronic reporting, if mandatory, will not impose substantial costs or other adverse effects on the public, especially State and local governments and small business entities.

### 4.15  Records Management.

(a) Ensure that records management programs provide adequate and proper documentation of AMC activities;

(b) Ensure the ability to access records regardless of form or medium;

(c) In a timely fashion, obtain or establish retention schedules for AMC records; and

(d) Provide training and guidance as appropriate to all AMC officials and employees and contractors regarding their Federal records management responsibilities.

### 4.16  Providing Information to the Public.

AMC has a responsibility to provide information to the public consistent with its missions. AMC elements shall discharge this responsibility by:

(a) Providing information, as required by law, describing the AMC organization, activities, programs, meetings, systems of records, and other information holdings, and how the public may gain access to agency information resources;

(b) Providing access to AMC records under provisions of the Freedom of Information Act and the Privacy Act, subject to the protections and limitations provided for in these Acts;

(c) Providing such other information as is necessary or appropriate for the proper performance of AMC functions; and

(d) Disseminating information in a manner that achieves the best balance between the goals of maximizing the usefulness of the information and minimizing the cost to the government and the public;

 (e) Helping customers and the public locate public information maintained by or for AMC.

### 4.17  Information Collection.

AMC elements shall collect or create only that information necessary for the proper performance of AMC functions and which has practical utility.

### 4.18  Information Dissemination Management System.

AMC elements shall maintain and implement a management system for all information dissemination products that shall, at a minimum:

(a) Assure that information dissemination products are necessary for proper performance of AMC functions;

(b) Consider whether an information dissemination product available from other Federal or nonfederal sources is equivalent to an AMC information dissemination product and reasonably fulfills the dissemination responsibilities of AMC;

(c) Establish and maintain inventories of all AMC information dissemination products;

(d) Develop such other aids to locating AMC information dissemination products including catalogs and directories, as may reasonably achieve AMC information dissemination objectives;

(e) Identify in information dissemination products the source of the information, if from another agency;

(f) Ensure that customers and members of the public with disabilities -- who the agency has a responsibility to inform -- have a reasonable ability to access the information dissemination products;

(g) Ensure that government publications are made available to depository libraries through the facilities of the Government Printing Office;

(h) Provide electronic information dissemination products to the Government Printing Office for distribution to depository libraries;

(i)  Provide adequate notice when initiating, substantially modifying, or terminating significant information dissemination products; and

### 4.19  Avoiding Restrictive Practices.

(a) Avoid establishing, or permitting others to establish on their behalf, exclusive, restricted, or other distribution arrangements that interfere with the availability of information dissemination products on a timely and equitable basis;

(b) Avoid establishing restrictions or regulations, including the charging of fees or royalties, on the reuse, resale, or redissemination of Federal information dissemination products by the public; and,

(c) Set user charges for information dissemination products at a level sufficient to recover the cost of dissemination but no higher. They shall exclude from calculation of the charges costs associated with original collection and processing of the information unless an exceptions exist  to this policy.

## 4.20  Electronic Information Dissemination.

AMC shall use electronic media and formats, including public networks, as appropriate and within budgetary constraints, in order to make AMC information more easily accessible and useful to customers and the public. The use of electronic media and formats for information dissemination is appropriate under the following conditions:

(a)  AMC develops and maintains the information electronically;

(b) Electronic media or formats are practical and cost effective ways to provide user or public access to a large, highly detailed volume of information;

(c)  AMC disseminates the product frequently;

(d) AMC knows a substantial portion of users have ready access to the necessary information technology and training to use electronic information dissemination products;

(e) A change to electronic dissemination, as the sole means of disseminating the product, will not impose substantial acquisition or training costs on users.

## 4.21  Electronic Signature

a method of signing an electronic message that --

(A) identifies and authenticates a particular person as the source of the electronic message; and

(B) indicates such person's approval of the information contained in the electronic message.  (GPEA, section 1709(1)).

This definition should be interpreted by reference to accepted legal definitions of signatures.  The term "signature" has long been understood as including "any symbol executed or adopted by a party with present intention to authenticate a writing."  (Uniform Commercial Code, 1-201(39)(1970)). These flexible definitions permit the use of different electronic signature technologies, such as digital signatures, digitized signatures or biometrics, discussed below.  For this reason, while it is the case that, for historical reasons, the Federal Rules of Evidence are tailored to the admissibility of paper-based evidence, the Rules of Evidence have no bias against electronic evidence.

As required by the Government Paperwork Elimination Act (GPEA), AMC must decide whether to use electronic signature technology for an application, which electronic signature technology may be most appropriate, and how to minimize the risk of fraud, error, or misuse when implementing an electronic signature technology to authenticate electronic transactions.  These procedures must be consistent with the requirement of the Paperwork Reduction Act of 1995 (PRA) that agencies shall "consistent with the Computer Security Act of 1987 (CSA)(40 U.S.C. 759 note), identify and afford security protections commensurate with the risk and magnitude of the harm resulting from the loss, misuse, or unauthorized access to or modification of information collected or maintained by or on behalf of an agency."  44 U.S.C. 3506(g)(3).

### 4.21.1  Electronic Authentication:

Electronic records submitted or maintained in accordance with procedures developed under this title, or electronic signatures or other forms of electronic authentication used in accordance with such procedures, shall not be denied legal effect, validity, or enforceability because such records are in electronic form. (GPEA, section 1707).

When specifying the requirements for using electronic record keeping by regulated entities (particularly the maintenance of electronic forms pertaining to employees by employers), AMC will use the "Performance Guideline for the Legal Acceptance of Records Produced by Information Technology Systems," developed by the Association for Information and Image Management (ANSI AIIM TR31).  This document provides suggestions for maximizing the likelihood that electronically filed and stored documents will be accorded full legal recognition. Use of digital signatures requires that each individual will be issued a unique digital signature certificate to use, agree to keep the private key confidential, and agree to accept responsibility for anything that is submitted using that key.

### 4.21.2  Risk Factors to Consider

Electronic signature technologies can offer degrees of confidence in authenticating identity greater even than the presence of a handwritten signature. These digital tools should be used to control risks in a cost-effective manner. In determining whether an electronic signature is sufficiently reliable for a particular purpose, AMC commands and agencies should consider the relationships between the parties, the value of the transaction, and the likely need for accessible, persuasive information regarding the transaction at some later date. Once these factors are considered separately, AMC users should consider them together to evaluate the sensitivity to risk for a particular process.

### 4.21.3  Technical Considerations of the Various Technologies

(a) While generally the most certain method for assuring identity electronically, use of digital signatures requires development of policies and documents which provide the important underlying framework of trust and which facilitate the evaluation of risk. The framework identifies how well the signer's identity is bound to his or her public key in a digital certificate (identity proofing); whether the private key is placed on a highly secure hardware token or is encapsulated in software only; and how difficult it is for a malefactor to deduce using cryptographic methods the private key (the cryptographic strength of the key-generating algorithm).

(b) By themselves, digitized (not digital) signatures, PINs and biometric identifiers do not directly bind identity to the contents of a document. For them to do so, they must be used in conjunction with some other mechanism. Biometric identifiers such as retinal patterns used in conjunction with digital signatures can offer far greater proof of identify than pen and ink signatures.

(c) While not as robust as biometric identifiers and digital signatures, PINs have the decided advantage of proven customer and citizen acceptance, as evidenced by the universal use of PINs for automated teller machine transactions. Such transactions, however, typically occur over proprietary networks rather than open networks like the Internet, where eavesdropping on transactions is much easier, unless the messages are encrypted.

## 4.22  Telecommunications

The telecommunications discipline provides the ability to gather and disseminate information through the transmission, emission, and reception of information of any nature by audio, visual, electro-optical, or electromagnetic systems. Guidance in the broad areas of telecommunications requirements validation, approval and acquisition exists in AR 25-1.

### 4.22.1  Wide-Area Networking

Wide-area networking (WAN) services constitute the long-haul communications infrastructure. They are typically composed of switched circuits with a network interface that allows transport-level address specification.

AMC's current wide-area networking environment is based on several DISA-provided networks, including the Defense Information Systems Network (DISN) and the Defense Data Network (DDN). Local-area networks (LANs) and campus-area networks (CANs) that are implemented and managed by AMC DOIMs are tied together by connecting to DISN and other DISA WANs.

Currently, OCONUS wide-area networking services are provided by the local telecommunications provider or by the Army Signal Corps (ASC). In Europe, dedicated lines originally used by the Seventh Army have been placed in service to support AMC's operations. Within CONUS, most traffic uses DISN, but the Technology Generation community also makes heavy use of the Defense Research and Engineering Network (DREN) and the Secure Internet Protocol Routed Network (SIPRNET).

Within CONUS, network service is adequate for current requirements, but will require enhancement to provide support for the future requirements demanded by AMC's strategic vision. Battlefield Integration will require support for different levels of service, which are needed to differentiate between critical and non-critical data streams. AMC's networking environment currently does not support levels of service, but DMS will provide this capability when it becomes available.

In OCONUS locations, wide-area network services provided by the local telecommunications provider or ASC often do not provide sufficient bandwidth, and can be inflexible due to the procedural delays associated with many local telecommunications providers. These issues currently impact War Reserves operations, since War Reserve personnel must use the local communications infrastructure to perform stock level and readiness reporting. In the future, the OCONUS networking environment will also impact AMC's ability to integrate wholesale and retail logistics systems, provide Battlefield Integration or successfully assume Wartime Executive Agent Responsibility. This is because it will not support the high traffic levels, different levels of service or flexibility of configuration that these new roles will demand. However, DISA is installing Asynchronous Transfer Mode (ATM) WAN backbones to support OCONUS operations, which may provide a sufficient level of support to achieve AMC's Strategic Intent.

AMC elements will determine requirements for the anticipated communications functions associated with network capability issues such as remote node support and service levels, and network capacity issues such as committed information rates, burst capacity and reliability. The installation of DISN backbones in OCONUS locations may alleviate the bandwidth and flexibility problems that have been observed in these locations.  AMC will follow the Department of Defense direction for wide-area networking in migrating to the Defense Messaging System (DMS), a services layer available through DISN. In the near term, AMC should plan to use DMS

to support CONUS communications where applicable. This should provide the support for mobile nodes and levels of service that are required for AMC's future roles.

### 4.22.2 Local-Area Networking

Local Area Networks (LANs) provide connectivity within an installation, contract site, or metropolitan area. They may be based on a variety of physical media, may have complex internal structures and use one (or more) of the popular network access technologies such as Token Ring or Ethernet, and transport protocols and utility suites, such as NetWare or TCP/IP. AMC LANs are installed and administered by local Directors of Information Management (DOIMs), unlike the wide-area network (WAN) infrastructure which is provided by DISA.

AMC's current MSC LAN environments consist of a variety of standards and protocols. Each DOIM selects and purchases network technology independently of the rest of the enterprise. The result is a mix of often incompatible networking technologies, which typically require significant effort and expenditure of resources to integrate. This incompatibility impedes communication within AMC, and drives up IT costs.

The AMC CIO will provide standards and guidance for the MSCs as they select, purchase and install new local area networks. This guidance will be based on applicable government and industry standards, and include specification of network media, adapters, networking and internetworking protocols, network operating systems as applicable, and network management and diagnostic tools. AMC elements will migrate of sites with non-standard LAN technology to the AMC standards.

### 4.22.3 Communication Services

Communication services enable an application to transparently interact with other applications regardless of whether they reside on the same computer or on a remote computer. Communication services involve technologies that support information exchange across a network. The AMC CIO will provide Communication / Data Exchange Standards for use in all AMC as a set of enterprise guidelines that provide a common, documented approach to information exchange among business systems and operational equipment. These standards will enable a consistent, reliable interchange of information. AMC will require a set of defined communication and data exchange standards to help achieve battlefield integration between AMC systems and weapon systems.

External communication services enable the integration between AMC systems and with industry/academia partner systems using network technologies. Currently, most of AMC's transaction processing with vendors occurs via fax, voice or through other manual communications. A limited number of AMC applications utilize electronic communication with

industry (e.g., Electronic Data Interface (EDI)).    The paper or voiced based approach is time consuming and more prone to errors than industry standard, electronic customer-supplier communications.  AMC will configure the infrastructure to leverage industry standard customer-supplier technologies.  AMC will move toward a robust communications infrastructure to support fast and reliable information exchange between various systems

### 4.22.4  Internet Based Services

The Internet is rapidly growing in importance as a communications vehicle for industry.  Internet based services are any World Wide Web related technology (e.g., web search services) or Internet technology (e.g., File Transfer Protocol (FTP)).  These Internet based services could be used by AMC to help leverage available web technologies and Internet capabilities.

The direction for Internet Based Services in AMC is to use web capabilities and the Internet for improving the ability to communicate within AMC and outside of AMC.  AMC will leverage available technologies with a set of AMC web development standards for compliance within AMC.  For example, the AMC-wide use of electronic solicitations and vendor payment would reduce non-system related delays (i.e. mail related delays) and help AMC move towards acquisition reform.  AMC could improve visibility into ongoing research and developments in industry and academia by utilizing available Internet based services.  Thus, AMC elements should develop strategies that will leverage available technologies and capabilities of both the Internet and the web.  These strategies should be applicable to all of AMC and would be the foundation for the creation of Internet and web related standards.  The web strategies should focus on using current web technologies to improve the flexibility that information is distributed and received from the web.  Commercially available intelligent agents and subscription services can be used to automatically search web databases for user specified information.

### 4.22.5  Directory Services

Directory services are databases of  all resources in the enterprise network environment. They track the system name, address and physical location of addressable resources in the environment. Resources can include users, programs, mailboxes, servers and printers. Directory services support user authentication, Network Operating System (NOS) administration, and user rights assignment. They provide the logical to physical translation in the environment (e.g., program REQPROC3.EXE on server RIASRV04 with IP address 192.1.2.3 can be accessed as "Requisition-Processing"), and enable communication between users, applications and devices. AMC currently uses the DAAS directory service for communications between applications. While DAAS provides the required abstraction of physical location, it is a batch-oriented service that forwards messages at predetermined intervals. This introduces delays into all functions that use DAAS.  AMC will examine ways of providing directory services with near-real-time performance and advanced features to support the target applications and wholesale/retail

integration.  AMC should evaluate commercially available directory services products that offer features such as a single network logon, a single point of administration, extensibility, scalability, and distributed security.  Adopting products with these characteristics would help AMC better manage infrastructure costs and provide AMC with a more flexible and robust technical environment.

### 4.23  Defense Megacenter Processing

AMC currently relies on DISA's Defense Megacenters (DMCs) to host and operate its key systems. While the server technologies and support staff are meeting the needs of AMC customers, the costs for this service are skyrocketing.  Much of the increase is due to DISA's method for distributing its costs. However, a significant portion is also tied to system usage, especially ad-hoc queries of the operational data files.

In addition, AMC's imperative to provide better decision support data to executives throughout the command suggests that a data warehouse or some other repository of summarized and decision support data will be required.  A mainframe, large server or cluster of servers will be needed to host this repository.  This repository facility must provide support for heavy data access loads, data replication and storage of massive amounts of historical data.

AMC should investigate the possibility of migrating its key systems from the Defense Megacenters to an AMC facility, or to the facility of a vendor providing this service.

AMC should identify the key cost drivers for DMC usage charges, and should develop a migration plan to reduce or eliminate the use of the most costly Megacenter services.

AMC should prepare to establish a data warehouse to contain decision support data, and should investigate the various platform options for hosting the data warehouse. The high cost of DMC query traffic indicates that the corporate data warehouse or repository may be better located in an AMC or vendor facility rather than at a DMC, depending on usage patterns and data distribution. The additional query load associated with decision support may be very costly if executed against a database located in a DMC.

### 4.24  Visual Information (VI)

Visual Information (VI) is that aspect of IT that pertains to the acquisition, creation, storage, transmission, distribution, and disposition of still and motion imagery and multimedia, with or without sound, linear or non-linear, for the purpose of conveying information.  Requirements for new, replacement, or expansion of VI systems and equipment will comply with all existing VI standards and procedures set by Army and procurement regulations.  Establishment, change of capability, or disestablishment of VI activities requires authorization of the AMC, ODISC4 or

DOD VI manager as appropriate.  A guide for the use and disposition of VI equipment is in DA PAM 25-91.

## 4.25  Printing and Publications

The Defense Automated Printing Service (DAPS), for the most part, satisfies AMC's printing and duplicating requirements on a reimbursable basis.   AMC staff, commands, activities and installations supported by the DAPS will coordinate requirements for local printing and duplication equipment with the nearest DPS office.  To satisfy valid requirements for separate administrative needs, AR 25-30 contains the policies and procedures for acquisition of  printing and publications - printing, electronic publishing, duplicating, and related equipment (including color copiers and copiers with a speed of 71 copies or more per minute).

# 5 IT Investments

The Clinger-Cohen Act places the government's technology decisions in a true business context. For the first time, all major technology decisions are being analyzed for the return on investment and the competitive edge they provide. As such, goals are set throughout all IT programs, particularly in the cost-performance tradeoff process. The CIO has oversight responsibility to ensure that IT, as well as supporting systems and services, directly contributes to AMC mission accomplishment while improving productivity or reducing operating costs. All programs will use performance measurement metrics to provide the analysis, control mechanism, horizontal integration, and feedback that allows AMC to wisely use IT funds and know the true value of its IT investments. The objective of the IT investment process in AMC is that senior managers be able to systematically maximize the benefits of IT investments throughout their respective organization, staff element, or functional area. See Investment Factors at Appendix B for Overall Risk and Return considerations.

IT investments involve all funds – regardless of funding category -- used for IT and information resources including computers, ancillary equipment, software, firmware, services and related resources. IT consists of any equipment or interconnected system or subsystem of equipment that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information. The term "information resources" means information and related resources, such as personnel, IT, and funds. An information system is a discrete set of information resources organized for the collection, processing, maintenance, use, sharing, dissemination or disposition of data.

## 5.1 The AMC IT Investment Process

The CIO evaluates Investments in IT proposed for funding based upon:

a. support for core/priority mission functions that need to be performed by AMC as outlined by the AMC Vision and Strategic Intent;

b. no alternative private sector or governmental source can efficiently support the function;

c. support work processes that have been simplified or otherwise redesigned to reduce costs, improve effectiveness, and make maximum use of commercial, off-the-shelf technology (business process reengineering);

d. demonstrate a projected return on the investment that is clearly equal to or better than alternative uses of available public resources. Return may include: improved mission performance in accordance with GPRA measures; reduced cost; increased quality, speed, or flexibility; and increased customer and employee satisfaction. Return should be adjusted for such risk factors as the project's technical complexity, the agency's management capacity, the likelihood of cost overruns, and the consequences of under- or non-performance

e. be consistent with Federal, Defense, Army, and AMC information architectures which: integrate AMC work processes and information flows with technology to achieve the AMC strategic intent; reflect the AMC technology vision; and specify standards that enable information exchange and resource sharing, while retaining flexibility in the choice of suppliers and in the design of local work processes;

f. reduce risk by: avoiding or isolating custom-designed components to minimize the potential adverse consequences on the overall project; using fully tested pilots, simulations, or prototype implementations before going to production; establishing clear measures and accountability for project progress; and, securing substantial involvement and buy-in throughout the project from the program officials who will use the system;

g. be implemented in phased, successive chunks as narrow in scope and brief in duration as practicable, each of which solves a specific part of an overall mission problem and delivers a measurable net benefit independent of future chunks; and,

h. employ an acquisition strategy that appropriately allocates risk between government and contractor, effectively uses competition, ties contract payments to accomplishments, and takes maximum advantage of commercial technology.

As a general presumption, the AMC CIO will recommend new or continued funding only for those IT investments that satisfy the above criteria.

### 5.1.1 Phases

The three phases of the IT investment process occur in a continuous cycle of selection, control and evaluation. Information from each phase flows freely among all of the other phases with the exception of evaluation. The evaluation component of the process has a unidirectional information flow to the selection component. The evaluation component is used to verify or modify the criteria used during selection.

➢ ***Investment Selection*** – *Select the best project.*
    Creating a portfolio of IT project investments that maximize mission performance, using an approved set of criteria for consistent comparison of projects.

➢ ***Investment Control*** *– Ensure that projects deliver the benefits projected.*
> Measuring ongoing IT projects against their projected costs, schedules, and benefits and taking action to continue, modify, or cancel them.

➢ ***Investment Evaluation*** *– Did you get what you expected?*
> Determining the actual value of an implemented investment against the organization's mission requirements and adapting the IT investment process to reflect lessons learned.

## 5.1.2 Thresholds

The thresholds are screening criteria to help functional proponents determine which of their IT investments should be subject to the centralized funding management procedures and the required CIO review process. For purposes of this Plan, IT investments include new initiatives, ongoing development efforts or procurements, operational systems, and any other type of IT project (including studies and task orders against existing contracts) – regardless of appropriation category. If any of the criteria below is applicable then the project is subject to CIO review:

- Total life cycle costs are $500K or more
- Annual cost is $100K or more.
- A high visibility, command interest program
- Critical to the success of an AMC business or program

IT projects meeting the defined threshold will be reviewed and prioritized by the appropriate functional proponent and forwarded to the CIO for concurrence in the IT solution and release of the necessary IT funds. Requirements will not be split to avoid the threshold. The MSCs, SRAs and DCSs will submit requirements and, if applicable, recommended technical solutions, to the appropriate functional proponent.

## 5.1.3 Sequence

- The initial step is to compare the current operational environment (processes, organization, systems) to the targeted operational environment (as depicted by the CIO IT Strategic Plan: CSTD Application Blueprint). As a result, identify the systems projects that fill the "gaps" between the current environment and the targeted operational environment. In short, define requirements.

- Examine the work process for improvement without automation investment and conduct BPRs for all new IT investments.

- Perform the economic analysis (EA) for the projects identified to achieve target operational environment. The CIO and the RM may provide support in the development of the EA.

- The functional proponent and CIO will review completed EA and provide approval for the targeted operational improvements or cost reductions. Functional proponents will prioritize the system projects based on operational impact and availability of funds.

- The CIO will work the funding requirements for the systems projects into the Planning Programming Budget Execution System (PPBES).

- As new system capabilities are delivered, or the operational targets change, the CIO will update CSTD, the Application Blueprint and the Technology Blueprint to reflect the new AMC target operational environment.

### 5.1.4 Allocation of IT Funds

#### a. Near Term

In the near term (one year, usually the execution year and sometimes the budget year), the CIO will review (1) current AMC investment initiatives based on meeting the strategic intent of the command and (2) specific IT areas for new opportunities to increase operating efficiencies (e.g., establish IT standards, interoperability of systems in accordance with information systems architectures, the required use of certain standard IT contracts, etc.). The result should be the termination of investments of lesser benefit to create funds for investments of greater benefit. New priorities and unfinanced operations and maintenance requirements will be addressed through the CIO to the Resource Integration Committee (RIC) and Resource Allocation Committee (RAC) process. Similar RDA requirements would be addressed via RDA funding procedures.

#### b. Out Years

For the outyears, each user and functional proponent should identify, prioritize, and incorporate long-range requirements to the CIO for incorporation into the PPBES for funding consideration under the relevant appropriation or working capital fund.

### 5.1.5 Annual Schedule of events/products/deliverables

**NLT 1 OCTOBER**

- DCS/MSC/SRA submission of IT investment requests for next budget year, to the appropriate functional review authority.

**OCTOBER – NOVEMBER**

- Functional evaluation of IT investment requests for next budget year (acceptance, rejection, or refer for further study). The functional proponent prioritizes accepted IT investments in order of importance. Priorities will be based on metrics in accordance with the CTTD and cost benefit to AMC. The functional proponents send the final prioritized lists of IT investments to CIO.
- This FY funding allocations made as appropriations enacted. Release of execution year IT funding in accordance with IT investments approved by the CIO and included in applicable part of the AMC IT Strategic Plan.
- CIO issues call for IT performance measures.

**DECEMBER**

- CIO evaluation of IT investments as submitted (acceptance, rejection, or refer for further study).
- CIO integrates IT investments into command-wide priority list.
- IT plans, investment and performance measure documentation refined as necessary.

**JANUARY - FEBRUARY**

- CIO provides integrated command-wide final list to RM.
- New draft of IT Strategic Plan and various supporting plans.
- President's Budget submitted to Congress for next FY.

**MARCH – APRIL**

- Functional proponents adjust and reevaluate execution of IT investments. Progress reports. Metrics measure performance.
- Congressional hearings take place on budget for next FY.

**MAY**

- CIO approves adjustment to execution funds based on requests received from performance measurement and adjustment reviews.
- Budget formulation begins for out year FY.

**JUNE – AUGUST**

- Development of preliminary requirements by DCS, MSC, & SRA Staffs.
- IT investment control and evaluation phase with reviews as necessary.
- Refine IT performance goals and measures.

**SEPTEMBER**

- Final update of IT Strategic Plan and various supporting plans
- DCS/MSC/SRA prepare submission of IT investment requests for next budget year.

## 5.2   Investment Selection

IT projects meeting the defined threshold will be reviewed and prioritized by the appropriate functional proponent and forwarded to the CIO for concurrence in the IT solution and release of the necessary IT funds.   Requirements will not be split to avoid the threshold.  The MSCs, SRAs and DCSs will submit requirements and, if applicable, recommended technical solutions, to the appropriate functional proponent.  Each functional proponent will establish and update metrics, in accordance with this plan, to measure whether IT investments help meet the Strategic Intent of AMC.  These will be recorded in the CSTD.  The functional proponents will review and prioritize each requirement in each of their respective areas based on meeting the AMC strategic intent as measured by the metrics. The prioritized requirements from each functional proponent will be submitted to the CIO.  The CIO will review the IT investment requirements to ensure application of the minimum criteria in considering whether or not to undertake a particular IT investment including criteria related to the quantitatively expressed projected net risk-adjusted return on investment and specific qualitative criteria for comparing alternative IT investment projects.  The CIO will identify investments that would result in shared benefits and costs among the core and support mission areas.  Based on the review of the net benefits and risks of the recommended investments, the CIO will integrate the IT investment requirements into a command wide IT investment priority list.

## 5.2.1   Functional Requirements Analysis

Wherever possible, requirements for IT systems should be stated using an open systems architecture which encompasses the following characteristics:

- User applications are not tied to a single hardware or system software manufacture.
- New functionality can be added from different contracts without significant effort.
- Other systems can be tied into the system without significant effort.
- The system fits the AMC Information Systems Architecture (ISA).

Provide a two or three paragraph description of how this IT program will satisfy the mission need, and how it is linked to the AMC IT Strategic Plan.  Identify the deficiencies in meeting the strategic goals and objectives in the IT Strategic Plan that are being met by this program; key requirements, objectives, and goals of the program; preferred/selected solutions; and any other key elements.  Indicate the goal(s) and/or objective(s) of the Corporate Strategic Technology Direction (CSTD) that this program supports, and the nature of that support in terms of near and long term targeted milestones. Additionally, provide a description of the cost and operational benefits expected along with the projected return on investment (ROI), including a description of how the  ROI was determined.  ROI, in this context, is equivalent to the internal rate of return.

### 5.2.2 Screen IT Project Proposals

A mature investment screening process will prescribe the amount and rigor of supporting documentation for IT project proposals based on their type and phase of implementation. Mission-critical projects will receive more detailed scrutiny than less strategically important ones. Key questions to be answered in the screening process include:

- Who is the approval authority?

- Is the project clearly relevant to mission priorities outlined in AMC's strategic intent, strategic plan and IT strategic plan (or applicable part of the CSTD)?

- Can the functional process be redesigned to eliminate the need for IT investment?

- Has a BPR been done?

- Is the project feasible to design and execute, given AMC's proven capabilities?

- Are commercial off-the-shelf systems available to meet all/most of the project's goals?

- Have other DOD or government agencies done this type of project?  Have their lessons learned been incorporated into project planning?  Have re-use of their product(s) been considered?

- Does the project conform to the Army Joint Technical Architecture (JTA) and the AMC Information Systems Architecture (ISA)?

- Will the project be executed in well-defined stages, with clear decision points for continuing, modifying, or canceling the project?

**5.2.3          Analyze Risks, Benefits, and Costs**

Technical review help will be available through the CIO from other AMC Headquarters staff, functional proponents, any potential materiel developers, and any of the CIO's designated Executive Agents. (EA).  It will evaluate the project's benefit-cost and risk analyses, and particularly the projected benefits to mission accomplishment and the proposed performance measures for comparing expected versus actual results.  Key questions in detailed evaluation include:

- Have project risks been assessed using a well-defined, documented process?  Has a sensitivity analysis been done for critical variables?

- Is there a specific plan for monitoring, managing, and mitigating project risks?

- What are the operational risks to users/customers if the project does not proceed?

- Have users and customers validated the proposed mission benefits of the project?

- Has a systematic, performance-oriented, detailed cost-benefit analysis been prepared and reviewed by Resource Management cost analysis personnel?

- Do projected costs reflect today's prices or those expected in the execution years?

- Are benefits clearly expressed in terms of improved mission performance, savings, or cost avoidance?

- Can project cost be shared with other AMC (Army?, Other Service?, Defense? Federal?) elements with similar needs?


**5.2.4   Prioritize Projects Based on Risk and Return**

The functional proponents will review and prioritize each requirement in each of their respective areas based on meeting the AMC strategic intent.  The CIO will use expected risks and benefits to identify candidate investments with the greatest chances of effectively and efficiently supporting key mission objectives within budget constraints.  It is essential in making this prioritization that all projects be measured against a consistent set of objective, results-oriented performance measures.

- *Investment Risk.*  How large is the proposed IT investment cost, particularly in comparison to the overall IT budget relative to a specific functional area?

- *Project Longevity and Scope.* Is the project using a modular approach?  Is development as narrow in scope and duration as possible?

- *Technical Risk.*  How will the proposed technology integrate with existing systems?  Does the project take advantage of commercial off the shelf (COTS) products?  How complex is the system architecture and software design?

- *Mission Impact.*  How will the IT investment support improved performance in specific outcome-oriented terms?

- *User/Customer Needs.*  How well does the investment address identified needs of the IT user or AMC customer communities?

- *Return on Investment (ROI).*  Is the calculated ROI adjusted for risk and analytically sound?

- *Organizational Impact.*  What will be the structural and procedural impacts of the investment on AMC overall and specifically upon impacted Major Subordinate Commands and Separate Reporting Activities?

- *Expected Improvement.*  Does the investment represent a new capability or the enhancement of existing ones?  Does law, regulation, or higher headquarters policy mandate it?  Is it required to maintain mission-critical functions?  What is the expected magnitude of the improvement in performance?

- The outcome of this step should be a prioritized list of IT investments with supporting documentation and analysis.  Typically the list would sort out into three groups:

- *Likely winners*, with high returns and low risk.

- *Likely dropouts*, with higher risk and low return.

- *Projects that warrant further study*, where risks and return are more evenly balanced.  The analytical and management focus should be on this group.

**5.2.5          Development Approach**

To allow flexibility in evaluation various solutions, functional requirements should not be described in equipment and software terms but in terms of:

- Business outcome – performance criteria or ultimate output
- Mission
- Purpose
- AMC program components involved
- Schedule and cost objectives
- Operating constraints

### 5.2.6      Major Interface

Indicate if the planned IT investment supports, or is supported by, direct or indirect interfaces with other IT or another information system. Succinctly describe the interface or support provided. Also, show how standard data will be utilized.

### 5.2.7      Risk Management

The acquisition strategy shall include identification of the risk areas of the program and a discussion of how the PM intends to manage those risks.

#### a. Program

The risk management program shall plan for back-ups in risk areas and identify design requirements where performance increase is small relative to cost, schedule, and performance risk. The acquisition strategy shall include identification of the risk areas of the program and a discussion of how the PM intends to manage those risks.

#### b. Process

The risk management effort shall address the identification and evaluation of potential sources of technical risks based on the technology being used and its related design, manufacturing capabilities, potential industry sources, test and support processes, risk mitigation efforts, and risk assessment and analysis. Technology transition planning and criteria shall be established as part of the overall risk management effort.

#### c. Reduce Risk

Avoid custom design components to minimize the potential adverse consequences on the overall project.  Use fully tested pilots, simulations, or prototype implementations before going to production.  Establish clear measures of accountability for project progress.  Secure substantial involvement and buy-in throughout the project from the program officials who will use the system.  Use an incremental or modular approach

## 5.3    Investment Control And Evaluation

The control phase represents the classical use of performance measures to track cost, schedule, and performance against a contractual requirement.  In any given core competency or support area, managers at every level must ensure that the focus of every IT project is to deliver the capabilities that the end user requires.  Performance measures for each required capability must be clearly established up front in the evaluation of the requirements, and user involvement must be maintained all the way to completion to ensure that the mission focus is not diluted as the project progresses.  The steps to develop and use IT performance measures effectively are listed in Appendix C.  After obtaining results, conduct measurement reviews to determine if the project met the objectives and whether the indicators adequately measured results. A key question is: "Do the results differ from what we expected?"  During reviews, seek ways to improve performance, refine indicators and identify lessons learned for future projects. The most useful performance reports track results over time and permit identification of trends.

## 5.3.1   Evaluation Guidelines

AMC elements shall promote the appropriate application of information resources as follows:

(a) Seek opportunities to improve the effectiveness and efficiency of government programs through work process redesign and the judicious application of information technology;

(b) Prepare, and update as necessary throughout the information system life cycle, a benefit-cost analysis for each information system:

     (1) at a level of detail appropriate to the size of the investment;
     (2) consistent with the methodology described in OMB Circular No. A-94, "Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs;" and
     (3) that relies on systematic measures of mission performance, including the:
          (a) effectiveness of program delivery;
          (b) efficiency of program administration; and
          (c) reduction in burden, including information collection burden, imposed on the public;

(c) Conduct benefit-cost analyses to support ongoing management oversight processes that maximize return on investment and minimize financial and operational risk for investments in major information systems on an agency-wide basis; and

(d) Conduct post-implementation reviews of information systems to validate estimated benefits and document effective management practices for broader use.

### 5.3.2        Metrics and Observables

Performance-based management links investment planning with the systematic use of select feedback to manage projects and processes. Projects cannot be managed unless they are measured. The measurement process includes translating business strategies into actions at the operational level; selecting projects that have the greatest value; developing measurement mechanisms; measuring, analyzing and communicating the results; and finding ways to improve performance.  Successful performance-based management depends upon the effective use of performance measures.

The new AMC IT Strategic Plan formalizes the process for cost-performance tradeoff and better connects the user, supporter and developer to facilitate effective tradeoffs, arriving at an affordable balance among performance and schedule.  The functional proponents will identify key IT metrics and observables to ensure AMC meets the goals of the IT Strategic Plan.  This Plan sets forth various areas of measurement considered by the CIO as valuable in determining accountability for IT spending.  The CIO will advise functional proponents on the tailoring of metrics to meet individual needs.

### 5.3.3   Performance and Program Measurement

Describe key approved program performance measures that will be used to determine program success and software development measures that will be used to track program progress. The measures shall address:

(1)  Program Success - regarding achievement of performance measures that are linked to strategic goals and objectives.

(2)  Schedule and Progress - regarding completion of program milestones, significant events, and individual work items.

(3)  Growth and Stability - regarding stability of required functionality or capability and the volume of software delivered to provide required capability.

(4)  Funding and Personnel Resources - regarding the balance between work to be performed and resources assigned and used.

(5)  Product Quality - regarding the ability of delivered product to support the user's need without failure, and problems and errors discovered during testing that result in the need for rework.

(6)  Software Development Performance - regarding the developer's productivity capabilities relative to program needs.

(7)  Technical Adequacy - regarding software reuse and use of approved standard data elements, and compliance with the DOD Joint Technical Architecture (JTA).

### 5.3.4  Configuration management (CM)

An essential part of the Investment Control and Evaluation components is a configuration management process to control the IT system products, processes and related documentation. The configuration management effort includes identifying, documenting, and verifying the functional and physical characteristics of a configuration item; recording the configuration of an item; and controlling changes to an item and its documentation.  It shall provide a complete audit trail of decisions and design modifications.  For more detail see Appendix D – Configuration Management.

# 6   INFORMATION ASSURANCE PROGRAM

Ensure that information is protected commensurate with the risk and magnitude of the harm that would result from the loss, misuse, or unauthorized access to or modification of such information; Information systems shall be managed and engineered using the best processes and practices that are known to reduce security risks, including the risks to timely accreditation. Information assurance requirements shall be included as part of program and systems design activities to ensure availability, integrity, authentication, confidentiality, and non-repudiation of critical program technology and information.  This includes providing for the restoration of information systems by incorporating protection, detection, and reaction capabilities.

## 6.1   Safeguards

All AMC elements shall:

(a) Ensure that information is protected commensurate with the risk and magnitude of the harm that would result from the loss, misuse, or unauthorized access to or modification of such information;

(b) Limit the collection of information which identifies individuals to that which is legally authorized and necessary for the proper performance of agency functions;

(c) Limit the sharing of information that identifies individuals or contains proprietary information to that which is legally authorized, and impose appropriate conditions on use where a continuing obligation to ensure the confidentiality of the information exists;

(d) Provide individuals, upon request, access to records about them maintained in Privacy Act systems of records, and permit them to amend such records as are in error consistent with the provisions of the Privacy Act.

## 6.2   Continuity Of Operations Plan (COOP)

COOP assures that consideration is given to keeping the Army functioning.  All IS, both hardware and software assets, will have COOP fully considered during requirements definition, and engineered during the design, development, and maintenance activities.  The COOP will be periodically tested as directed in the plan itself.

## 6.3    Information Assurance Strategic Plan

The CIO has the Information Assurance Strategic Plan under development with a projected completion date in the mid-2000 time frame.

# 7 ACQUISITION OF INFORMATION TECHNOLOGY

## 7.1 Acquisition Plans

AMC IT acquisition plans should reflect a commitment to:

- Make maximum use of commercial off-the-shelf technology.
- Consult with industry to determine what technology is available.
- Consider alternative technical approaches.
- Pursue streamlined acquisition strategies.

## 7.2 Standard Contracts

The establishment of IT standards and the use of standard IT contracts will allow the leveraging of new opportunities that promote the most efficient, effective use of available assets. As a part of its approach to IT Funding, AMC will use, to the maximum extent possible, existing IT programs and standard contracts for the acquisition of new general purpose IT (e.g., sustaining base administrative and business information systems, desktop systems, etc). Army standard contracts are managed through the U.S. Army Communications-Electronics Command (CECOM) Systems Management Center. Details can be found on their web site.

## 7.3 Commercial Items

A commercial item is defined as any item, other than real property, that is of a type customarily used for nongovernmental purposes and that: (1) has been sold, leased, or licensed to the general public; or, (2) has been offered for sale, lease, or license to the general public; or any item that evolved through advances in technology or performance and that is not yet available in the commercial marketplace, but will be available in the commercial marketplace in time to satisfy the delivery requirements under a Government solicitation. Also included in the definition are services in support of a commercial item, or a type offered and sold competitively in substantial quantities in the commercial marketplace based on established catalog or market prices for specific tasks performed under standard commercial terms and conditions; this does not include services that are sold based on hourly rates without an established catalog or market price for a specific service performed (FAR 2.101).

## 7.4 Standards

All AMC activities shall address the use of open standards in the design of all systems elements (mechanical, electrical, software, etc.). The design effort shall select open standards for interfaces based on the criteria described in the open systems strategy. Interfaces are internal, external, physical and functional. Selected interfaces shall be controlled by standards adopted by recognized standards organizations whenever possible. When these standards are not effective, de facto standards (set by the market place) shall be used. This approach shall be followed to develop a standards-based architecture in designing systems. All IT personnel shall document means for assuring conformance to open standards.

## 7.5    Information Systems Management Oversight.

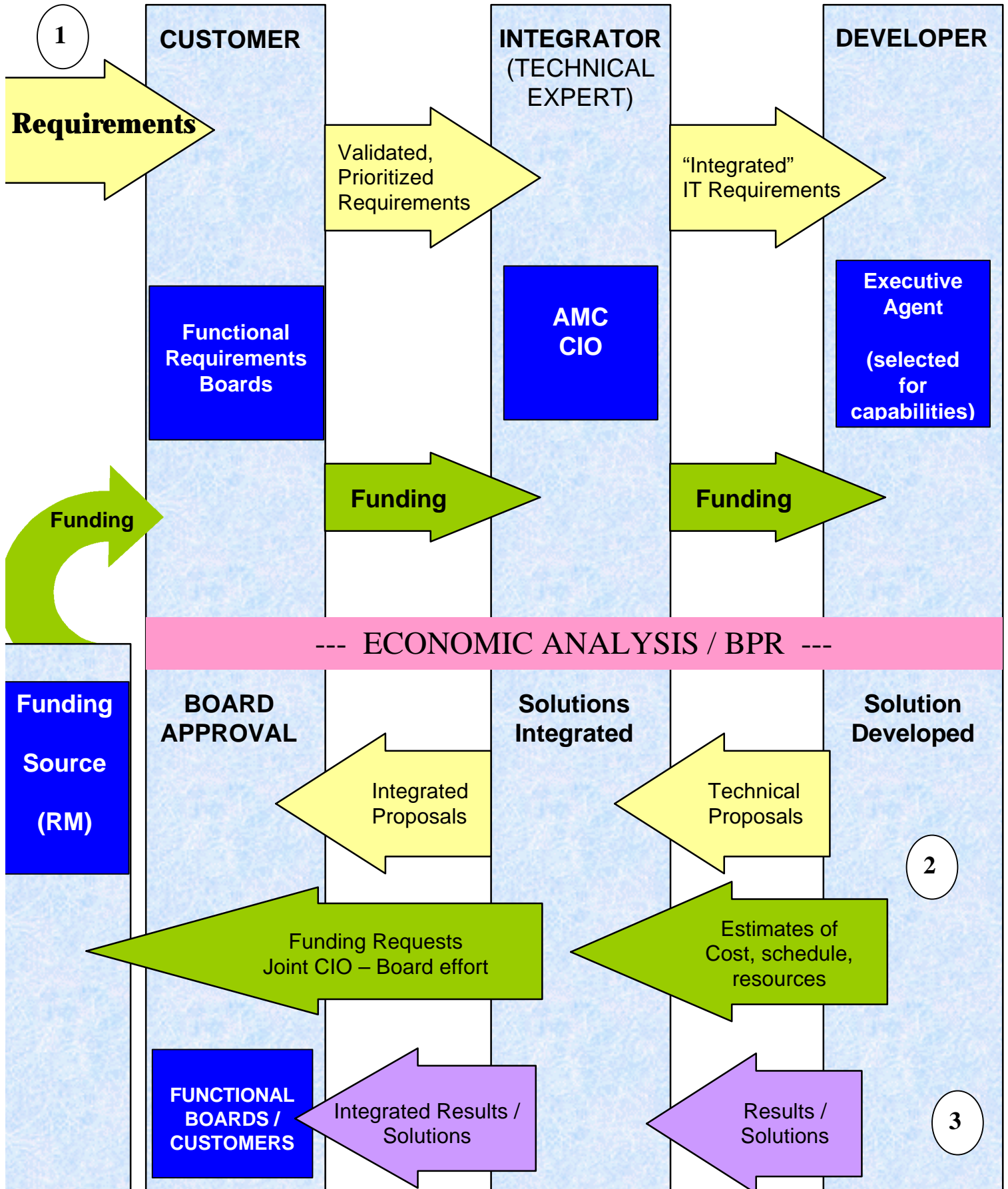AMC elements shall establish information system management oversight mechanisms that:

(a) Ensure that each information system meets AMC mission requirements;

(b) Provide for periodic review of information systems to determine:

      (1) how mission requirements might have changed;
      (2) whether the information system continues to fulfill ongoing and anticipated mission requirements; and
      (3) what level of maintenance is needed to ensure the information system meets mission requirements cost effectively;

(c) Ensure that the official who administers a program supported by an information system is responsible and accountable for the management of that information system throughout its life cycle;

(d) Provide for the appropriate training for users of Federal information resources;

(e) Prescribe Federal information system requirements that do not unduly restrict the prerogatives of state, local, and tribal governments;

(f) Ensure that major information systems proceed in a timely fashion towards agreed-upon milestones in an information system life cycle, meet user requirements, and deliver intended benefits to the agency and affected publics through coordinated decision making about the information, human, financial, and other supporting resources; and

(g) Ensure that financial management systems conform to the requirements of OMB Circular No. A-127, "Financial Management Systems."

## 7.6    Acquisition of Information Technology.

All AMC commands, agencies and staff shall:

(a) Acquire information technology in a manner that makes use of full and open competition and that maximizes return on investment;

(b) Acquire off-the-shelf software from commercial sources, unless the cost effectiveness of developing custom software to meet mission needs is clear and has been documented;

(c) Acquire information technology in accordance with OMB Circular No. A-109, "Acquisition of Major Systems," where appropriate; and

(d) Acquire information technology in a manner that considers the need for accommodations of accessibility for individuals with disabilities to the extent that needs for such access exist.

## APPENDIX A: IT BUSINESS PROCESS MANAGEMENT

**(1)**

**CUSTOMER**

**INTEGRATOR**
(TECHNICAL EXPERT)

**DEVELOPER**

**Requirements** →

Validated, Prioritized Requirements →

"Integrated" IT Requirements →

**Functional Requirements Boards**

**AMC CIO**

**Executive Agent**

**(selected for capabilities)**

**Funding** →

**Funding** →

**Funding** →

--- ECONOMIC ANALYSIS / BPR ---

**Funding Source (RM)**

**BOARD APPROVAL**

**Solutions Integrated**

**Solution Developed**

← Integrated Proposals

← Technical Proposals

**(2)**

← Funding Requests Joint CIO – Board effort

← Estimates of Cost, schedule, resources

**FUNCTIONAL BOARDS / CUSTOMERS**

← Integrated Results / Solutions

← Results / Solutions

**(3)**

## IT BUSINESS PROCESS MANAGEMENT

The concept of Information Technology (IT) Business Process Management in AMC is part of a major paradigm shift in IT planning, acquisition and management.  The AMC CIO focuses on defining the IT Business Process Management before implementing centralized IT management procedures.  Investment in IT and business process applications have traditionally been made by individual staff offices and subordinate commands or activities.  These elements have resources to begin building solutions or provide maintenance for existing systems.  Often solutions address only individual requirements, duplicate other initiatives or run out of funds during the project.  Technical solutions should address the needs of the command overall and derived from discussions among technical personnel.  Additional needs could be met and IT costs lowered by integrated technical solutions from capable developers.  The IT Business Process Management concept provides direction for the analysis of AMC's business operations and the application of IT to increase effectiveness, improve business performance, and reduce overall operating costs.

The IT Business Process Management model derives from the February 4, 1999 Commanding General approval (with additional guidance from GEN Coburn of 18 May 99) of the *"Concept for Centralized Management of Information Technology  (IT) Investment Funds."*  The concept establishes a centralized procedure to establish effective and efficient capital planning processes for selecting, managing, and evaluating the results of all major investments in IT.  The initial evaluation of requirements is done by functional proponents and staff elements through four AMC Business Systems Corporate Boards (BSCBs): logistics, acquisition, technology, and support, based on mission needs and projected out-year resources.

The AMC Chief Information Officer (CIO) has oversight responsibility to ensure that IT systems and services include minimum criteria to be applied in considering whether to undertake or continue a particular IT investment.  The criteria required to justify the expenditure of scarce resources places emphasis on such items as improved productivity, reduced operating costs, a favorable risk-adjusted return on investment, and the use of quantitative means for comparing and prioritizing alternatives.  The CIO ensures the analysis, control mechanisms, horizontal integration, and management techniques are in place that allows AMC to wisely use IT funds and know the true value of its IT investments.  The BSCBs serve as requirements boards and have responsibility for programs in their respective areas throughout the Command.  The technical area is the responsibility of the CIO, any CIO designated executive agents, and IT personnel in various CIO elements throughout the Command. As part of the requirements of the Clinger-Cohen act (as being implemented in a new AR 25-1), performance measurement is an essential part of effective IT management.  The CIO, in conjunction with functional proponents, BSCBs, and Developers (or Providers) – as applicable -  monitors all IT projects – existing programs and new initiatives -- to ensure their link to the budget process and ability to meet mission requirements within approved program goals and resources.

Per the Clinger-Cohen Act, the CIO has oversight responsibility for all IT functions in an organization.  Transition to the new CIO concept and new IT Business Process Management model will take some time.  At present there are many on-going IT development and maintenance activities.  Executive agents manage IT funds from various accounts.  Under the IT Business Process Management concept, functional working groups or boards will now concentrate solely on functional requirements not technical and IT design considerations.  Functional personnel will evaluate requirements with help, as necessary, from the CIO.  Business Process Reengineering (BPR) considerations will be part of this evaluation.  It is the CIO's responsibility to ensure a BPR analysis has been accomplished and evaluated as part of the requirements package.  All functional requirements go to one of the corporate boards to be validated, prioritized and handed off to the CIO.  Once the CIO determines the project does not replicate any existing or planned IT efforts, the action is referred to an appropriate executive agent – selected for capabilities – to be the materiel developer.  The designated developer or provider develops a technical proposal and cost estimates.  The technical proposals (whether stand alone or integrated) and cost estimates are then processed through the CIO to the BSCBs for their review, comment and approval.  The Economic Analysis spans all areas (Customer, Integrator, and Developer) receiving assistance and validation from Resources Management elements as required or appropriate..

The CIO works jointly with the Boards to justify costs to the funding source.  The funding source approves or disapproves the allocation of specific actual dollar amounts.  Allocated funds pass to the developer or provider through a BSCB with the CIO agreement and approval.  For new IT initiatives or modifications of existing IT programs greater than or equal to $100K, funding sources will not give money direct to AMC elements (e.g. MSCs, SRAs, DCSs, etc.) nor any other agency without prior board and CIO signature. As part of the process, the boards and CIO will sign off annually on each IT initiative or fund release.  During the year the CIO keeps in touch with all IT initiatives and expenditures for oversight (on schedule, meeting milestones, on budget, meeting standards, implementing Information Assurance goals, etc.).  The CIO monitors program management (schedule, progress and metrics) and, funding (cost), and technology for all IT including weapon systems or as described in broader context by the Clinger-Cohen Act, National Security Systems.

The CIO has a responsibility to recommend to the Commanding General, USAMC, any IT program changes such as curtailment or cancellation.  To make competent recommendations, the CIO must know the status of all IT programs throughout the Command.  Subordinate Command and Activity CIOs act as an extension of the CIO for oversight of all IT.  The Army CIO or AMC Command Group should be able to call the AMC CIO at any time and ask the status of a given IT program.  The AMC CIO should be able to respond within a brief period with an information fact sheet showing the current status of the program.

The integrator and developer (or provider) will not change nor modify functional requirements.  Questions or recommendations for changes will be returned to the appropriate functional proponent for resolution through the applicable board.    Boards make sure there are no

unvalidated requirements.  Boards prioritize.  The CIO integrates priorities (take all requirements – rack & stack).  Integrated proposals go back to Boards for review.  Unresolved differences will be referred to the DCG for resolution.  The IT Business Process Management supplements the Resource Integration Committee (RIC) and Resource Allocation Committee (RAC) process.  The Support Board does all that does not fall under one of the three core competency other boards.  The Boards interface directly with customers.  The developer may help with approvals across the entire spectrum just as there is a joint CIO-Board effort on funding.  The bottom line is a clear distinction between functional and technical.  The CIO is the integration contractor.  Board Approvals focus cost and schedule with an acceptable outcome and a meeting of functional requirements.

**APPENDIX B  -  Investment Factors**

**The Risk Factors**

Investment Size: How large is the proposed technology investment, especially in comparison to the overall IT budget?

Project Longevity: Do projects apply a modular approach that combines controlled systems development with rapid prototyping techniques? Are projects as narrow in scope and brief in duration as possible to reduce risk by identifying problems early and focusing on project versus realized results. Modular approaches are considered less risky.

Technical Risk: How will the proposed technology be integrated into existing systems? Will proposed investments take advantage of commercial-off-the-shelf software and systems? How will the complexity of the systems architecture and software design affect the project?

**The Return Factors**

Business Impact or Mission Effectiveness: How will the investment contribute toward improvement organization performance in specific outcome-oriented terms?

Customer Needs: How well does the investment address identified internal and/or external customer needs/demands for increased service quality and timeliness or reductions in costs?

Return on Investment: Are the return on investment figures using benefit-cost analysis thresholds reliable and technically sound?

Organizational Impact: How broadly will the technology investment affect the organization (i.e., the number offices, users, work processes, and other systems)?

Expected Improvement: Is the proposed investment being used to support, maintain, or enhance existing operations systems and processes (tactical) or designed to improve future capability (strategic)? Do law, court ruling, Presidential directive, etc. require any projects? Is the project required to maintain critical operations--payroll, beneficiary checks, human safety, etc.--at a minimal operating level? What is the expected magnitude of the performance improvement expected from the technology investment?

**APPENDIX C – Steps To Develop and Use It Performance Measures**

(1.) Step 1: Link It Projects to Agency Goals and Objectives

The effective measurement of an IT investment's contribution to AMC accomplishments is based upon the AMC mission and strategic business plans.

(2.) Step 2: Develop Performance Measures

Measure the outcomes of the IT investment, not just its cost, timeliness and quality. An outcome is the resulting effect of the IT investment on an organization. Examples include measurable improvements in the quality and delivery of the organization's services and products.

(3.) Step 3: Establish Baseline to Compare Future Performance

Baselines enable agencies to determine whether performance improves or declines as a result of an IT investment. Valid baselines are documented, recognized and accepted by customers and stakeholders. Standard reports can serve as the baseline if, and only if, the reports apply to the indicators chosen. If no baseline exists, then the performance measures establish the baseline.

(4.) Step 4: Select IT Projects with the Greatest Value

In today's budget environment, AMC can only fund a limited number of IT projects. Consequently, AMC needs to select projects that provide the greatest value. Value is based on the estimated economic return of an IT investment plus its estimated contribution to an organization's business priorities. (This guide uses the terms "IT projects" and "IT investments" interchangeably.) To select the IT investments with the greatest value, the user or functional proponent will estimate the value and risks of each investment.

(5.) Step 5: Collect Data

The user or functional proponent needs to ask: "What data is needed to determine the output of the project? What data is needed to determine the effectiveness of the project?" The data used will depend upon availability, cost of collection and timeliness. Accuracy of the data is most important.

**APPENDIX D - Configuration Management (CM)**

1.  Army regulations describe CM as a process that identifies,
controls, and audits the functional and physical characteristics of information systems, equipment, software, and other configuration items (CIs).  Its primary purpose is to ensure quality by reducing the risk of introducing errors during system changes.

2.  The configuration Control process regulates changes to CIs. The process provides controlled procedures for processing and implementing system changes.  The process covers the priority,  impact, cost, and  benefits of changes.

3.  As part of the CM process, baselines are established which identify the sum of the applicable configuration items.  Through version control the old baseline(CIs) plus new Engineering Change Proposals (ECPs) are used to established a new baseline.

4.  Configuration Status Accounting (CSA) tracks the current approved configuration baselines, operational units, and changes, and monitors all related tasks resulting from such changes.

5.  Configuration audits verify and document that CIs have been developed satisfactorily, that they and their documentation agree, and that the CIs perform as expected.

6.  Configuration Control Boards (CCB) typically achieve CM.  The boards evaluate ECPs, approve them, prioritize them, and work with the Assigned Responsible Activity to determine implementation dates.

7.  Changes are typically categorized as to being emergency, urgent, or routine which in turn affects prioritization and method of fielding.  Version control applies to both development and production environments.  For example, under development,  discrete versions or separate libraries may be established for unit, division, quality control (independent testing) and other levels.  Within the production environment discrete versions / separate libraries may be maintained for previous, prototype, and fielded versions.  More complex situations occur when there are multiple versions in production at one time and parallel evolution of versions.

8.  Effort should be made to reduce risk to the extent possible.  Developers/operators should maintain the capability to retreat to a previous version should unsolvable problems occur in the production version. Changes to interfaces with other systems must be coordinated with developers/maintainers of those other systems to ensure continued interoperability.

9.  While CM is often associated with maintenance/sustainment phases, it is applicable to all life cycle stages.  Its rigorous discipline and some of its methodologies can well be adapted to  in initial stages, even to "portfolio" management.  CCBs can use CM to track/manage evolution of laws, through regulations and business processes to technical solutions.  Similarly they can use CM to manage evolution of business strategies and plans into IT strategies, plans, and implementations.

**APPENDIX E – CSTD Application Blueprint**

APPENDIX  F


**APPENDIX F – CSTD Technology Blueprint**

**APPENDIX G – CSTD Migration Plan**

**APPENDIX H – Information Assurance Strategic Plan**

Under development by the CIO.  Projected completion in the mid-2000 time frame.